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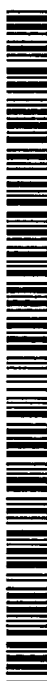
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(54) Title: NUCLEIC ACIDS AND ENCODED POLYPEPTIDES FOR USE IN LIVER DISORDERS AND EPITHELIAL CANCER

(57) Abstract: The invention relates to nucleic acids and to corresponding encoded polypeptides and to their use for the diagnosis, prevention and/or treatment of liver disorders and neoplastic disorders, especially cancer of the liver and other epithelial tissues, benign liver neoplasms such as adenoma and other proliferative liver disorders such as focal nodular hyperplasia (FNH) and cirrhosis. The invention further relates to methods of diagnosing and treating these disorders.



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## Description

### NUCLEIC ACIDS AND ENCODED POLYPEPTIDES FOR USE IN LIVER DISORDERS AND EPITHELIAL CANCER.

#### Technical Field

- [001] The invention relates to nucleotides and to corresponding encoded proteins and to their use for the diagnosis, prevention and/or treatment of liver disorders and neoplastic disorders, especially cancer of the liver and other epithelial tissues, benign liver neoplasms such as adenoma and other proliferative liver disorders such as focal nodular hyperplasia (FNH) and cirrhosis. The invention further relates to methods of diagnosing and treating these disorders.
- [002] The development of cancer in general is characterized by genetic mutations that alter activity of important cellular pathways including, for example, proliferation, apoptosis (cell death), response to stress and epithelial/stroma interactions. It is increasingly recognized that identification of nucleic acids that are deregulated in cancer can provide important new insight into the mechanisms of neoplastic transformation. Identification of deregulated nucleic acid expression in precancerous stages, such as macro regenerative nodules and the "large" and "small" cell change in liver cancer, provide understanding of early events in malignant transformation. Similarly, identification of deregulated gene expression in disorders characterized by tissue proliferation and remodeling, such as FNH and cirrhosis in the liver may distinguish nucleic acids involved in proliferation and malignant transformation. Together such deregulated nucleic acids and the encoded gene products have potential as new diagnostic markers for cancer. Moreover, the products of these deregulated nucleic acids *per se* are targets for therapeutic intervention in the prevention and/or treatment of these disorders in human patients.
- [003] The liver plays a vital role in the metabolism of proteins, lipids, carbohydrates, nucleic acids and vitamins. There are numerous disorders effecting the liver that cannot be diagnosed, prevented or treated effectively, such as hepatocellular carcinoma (HCC). Examination of HCC is particularly well suited for the identification of deregulated gene expression in cancer. This is because tissue samples of HCC can be obtained from surgically resected tumors and the tumors are well circumscribed solid structures with little stromal tissue. Furthermore, as indicated above, there is the possibility for comparative analyses of benign and malignant tumors as well as cirrhosis, a non-neoplastic condition. If the limitations in the art of identifying differentially expressed genes associated with liver disorders could be overcome, this comparative approach may enable identification of deregulated nucleic acids

specifically involved in the processes of cellular proliferation and tissue remodeling in a mature organ (e.g., in cirrhosis) as well as the identification and discrimination of gene expression alterations associated with hyperplasia (such as FNH) and with benign and malignant neoplasms (e.g., adenoma and HCC). In HCC there is an urgent need for new and better diagnostic and therapeutic capabilities. Deregulated genes in liver cancer may also be highly relevant to other cancers of the gastrointestinal tract and indeed with other carcinomas (epithelial derived cancers) as these tissues share a common embryological origin.

- [004] On a global basis, hepatocellular carcinoma (HCC) belongs to the most common malignant tumors accounting for about 1 million deaths/year (Ishak et al., 1999, Atlas of Tumor Pathology. Fascicle 31. Armed Forces Institute of Pathology, Washington, DC).
- [005] Definitive diagnosis of neoplastic liver disorders such as HCC and many other tumors relies upon histopathological evaluation of biopsy specimens. This invasive surgical procedure is generally not undertaken until symptoms appear and the disease is then most often in advanced stages, thereby limiting therapeutic intervention options. Thus there is a need to improve diagnostics and methods of diagnosis. In addition, early diagnosis is crucial but hampered by late onset or even a lack of specific clinical symptoms. At diagnosis most HCC tumors are no longer amenable to surgical resection (except encapsulated tumors or the fibrolamellar variants) (Chen and Jeng, 1997, J. Gastroenterol. Hepatol., 12:329-34); moreover, they are highly resistant to cytostatic therapy (Kawata et al., 2001, Br. J. Cancer, 84:886-91). Overall, death usually occurs within 1 year after diagnosis. Thus, markers for early detection, prognostic indicators, and effective prevention and/or treatment regimens for HCC are highly desirable in this field.
- [006] In contrast, unlike the well-studied situation in colorectal cancer, liver adenoma may not represent a precursor lesion of HCC. Similarly, although cirrhosis and hepatitis viral infections are clearly risk factors for HCC, these conditions are not prerequisite for the development of HCC. Certain liver lesions may represent HCC prestages such as macro regenerative nodular hyperplasia, but this is not yet confirmed (Shortell and Schwartz, 1991, Surg Gynecol Obstet., 173:426-31; Anthony, P. in MacSween et al, eds. Pathology of the Liver. 2001, Churchill Livingstone, Edinburgh). Although these disorders are diagnosed by histopathological investigation of liver resections and liver biopsies, no efficient method exists for earlier or non-invasive detection of these conditions. Again, there is immediate need for diagnostic and prognostic markers for these neoplasms and for non-invasive detection of these disorders.
- [007] Within the past decade, several technologies have made it possible to monitor the

expression level of a large number of transcripts within a cell at any one time (see, e.g., Schena et al., 1995, Science, 270:467-470; Blanchard et al., 1996, Nature Biotechnology, 1996, 14:1649). Transcript array technology has been utilized for the identification of genes that are up regulated or down regulated in various disordered states. Several recent studies have utilized this technology to examine changes in gene expression in HCC. These studies have variously revealed deregulation (i.e., over- and underexpression) of genes encoding liver specific proteins in HCC cell lines and HCC tissues relative to controls. Moreover the studies revealed genes essential for cell cycle control, stress response, apoptosis, lipid metabolism, cell-cell-interaction, DNA repair and cytokine and growth factor production (e.g., Graveel et al, 2001, Oncogene, 20:2704-12; Tackels-Horne et al, 2001, Cancer, 92: 395-405; Xu et al, 2001, Cancer Res., 61:3176-81). However, there is little concordance in the gene expression patterns reported in these studies that may be due to differences in experimental design and/or to the heterogeneity of HCC tissue *per se*. Moreover, the etiologies of these HCCs are an important factor. Chronic hepatitis B and C virus infections are the major causes of HCC but damage from alcohol and chronic liver metabolic disorders are also recognized to result in HCC and the mechanisms responsible for development of a tumor from these different etiologies are likely to differ. Taken together, until now no satisfactory diagnostics and methods of diagnosing have been developed in order to be able to intervene in liver disorders.

[008] The same applies to the therapy of liver disorders, and epithelial cancers. For HCC for instance, there is no effective therapeutic option except resection and transplantation but these approaches are only applicable in early stages of HCC, limited by the access to donor livers, and associated with severe risks for the patient. In addition, these approaches are extremely expensive. These cancers respond very poorly to chemotherapeutics, most likely due the normal liver function in detoxification and export of harmful compounds. Several other therapeutic options, such as chemoembolization, cryotherapy and ethanol injection are still in an experimental phase and the efficacy of these is not established. Surgical intervention remains the best treatment option but it is not possible to define with precision the extent of the tumor. This invasive procedure therefore, is suboptimal from the perspective of treatment. Furthermore, the lack of early diagnostics for specific liver dysfunctions leads most often to advanced progression of the disease that further confounds therapeutic options and dramatically increases patient mortality from these diseases (Jansen P.L., 1999, Neth. J. Med., 55:287-292). Thus until now no satisfactory therapies have been developed in order to be able to intervene in liver disorders, and other epithelial cancers. Furthermore, in the state of the art, recognition of the different subtypes of liver disorders such as HCC precursor lesions, benign liver neoplasms, and metabolic



liver diseases such as alcoholic liver disease and cirrhosis, as revealed by differential gene expression, have not been disclosed. A summary of the key disease features of some of the disorders evaluated in the invention is provided in Table 1.

[009] **Table 1: Diseases features**

**Table 1**

DISORDER	Cellular proliferati on	Tissue remodeli ng	Clonal cell expansio n	Neoplasia	Transformatio n/ Malignant potential
Cirrhosis	+	+			
FNH	+	+	+/-		
Adenoma	+	+	+	+	
HCC	+	+	+	+	+

### Summary of the Invention

[010] The invention relates to nucleotides and to corresponding encoded proteins and their use for the diagnosis, prevention and/or treatment of liver disorders, especially of hepatocellular carcinoma (HCC), and epithelial cancers, pre-cancerous liver lesions, benign neoplasms such as adenoma, and other proliferative liver disorders such as focal nodular hyperplasia (FNH) and cirrhosis. The invention also relates to vectors and cells comprising such nucleic acids, and to antibodies or antibody fragments directed against said polypeptides and nucleic acids.

[011] The invention further relates to methods of diagnosing and treating these disorders. The evaluation of multiple disorders with overlapping but distinct morphological and clinical features provides new information for identification and discrimination and ultimately new therapeutic strategies for these disorders according to invention.

### Disclosure of Invention

[012] A unique approach employed in this invention utilizes discrete, pathologist-confirmed liver cancer pathologies for production of disease specific cDNA libraries enriched in genes specifically up- and down-regulated in HCC compared with a pool of non-neoplastic human livers. The library is a genome-wide representation of deregulated gene expression in HCC and therefore includes all potential HCC deregulated genes. Repetitive hybridization to these library clones with labeled expressed nucleic acids from many additional discrete, pathologist-confirmed liver cancer samples (HCCs) and non-malignant liver lesions indicated nucleic acids highly deregulated in HCC. The surprising finding is that this approach provides deregulated

nucleic acids that had not previously been identified as well as many deregulated nucleic acids that were not before associated with HCC, the elevated expression of which can also be associated with other neoplasms. These HCC deregulated genes and proteins are the subject of this invention.

- [013] The screening and verification strategy is already inventive *per se* owing to the elaborate and defined choice of parameters. Identification of differentially expressed genes according to the invention relies upon histopathologically distinguished liver disease tissue for comparison of gene expression changes in disorders of the human liver. Non-diseased reference liver samples for the experiments are also diagnostically confirmed.
- [014] The object of the invention is a method of diagnosis of a liver disorder, liver cancer and/or epithelial cancer, wherein at least one compound selected from the group consisting of a polypeptide according to the sequence SEQ ID 1 to SEQ ID 93 (Table 2A to 2D), a functional variant thereof, a nucleic acid encoding one of the aforementioned polypeptides, a variant of one of the aforementioned nucleic acids, an antibody or a fragment of the antibody directed against one of the aforementioned polypeptides, or variants thereof, is identified in the sample of a patient and compared with at least one compound of a reference library or of a reference sample.
- [015] Another object of the invention is a method of treating a patient suffering from a liver disorder or an epithelial cancer, wherein at least one compound selected from the group consisting of a polypeptide according to the SEQ ID 1 to SEQ ID 93, a functional variant of one of the aforementioned polypeptides, a nucleic acid encoding one of the aforementioned polypeptides or a functional variant thereof, a variant of one of the aforementioned nucleic acids, a nucleic acid which is a non-functional mutant variant of one of the aforementioned nucleic acids, a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, a vector comprising one of the aforementioned nucleic acids, a cell comprising one of the aforementioned nucleic acids, a cell comprising the aforementioned vector, an antibody or a fragment of one of the aforementioned antibodies directed against one of the aforementioned polypeptides or against a functional variant thereof, a vector comprising a nucleic acid coding for one of the aforementioned antibodies, a vector comprising a nucleic acid coding for one of the aforementioned antibody fragments, a cell comprising the vector comprising a nucleic acid coding for one of the aforementioned antibodies, and a cell comprising the vector comprising a nucleic acid coding for one of the aforementioned antibody fragments, is administered to the patient in need of a the treatment in a therapeutically effective amount.
- [016] Another aspect of the invention is a pharmaceutical composition comprising at least one compound selected from the group consisting of a polypeptide according to the

invention, a functional variant thereof, a nucleic acid encoding one of the aforementioned polypeptides or a functional variant thereof, a variant of one of the aforementioned nucleic acids, a nucleic acid which is a non-functional mutant variant of one of the aforementioned nucleic acids, a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, a vector comprising one of the aforementioned nucleic acids, a cell comprising one of the aforementioned nucleic acids, a cell comprising the aforementioned vector, an antibody directed against one of the aforementioned polypeptides, an antibody directed against a functional variant of one of the aforementioned polypeptides, a fragment of one of the aforementioned antibodies, a vector comprising a nucleic acid coding for one of the aforementioned antibodies, a vector comprising a nucleic acid coding for one of the aforementioned antibody fragments, a cell comprising the vector comprising a nucleic acid coding for one of the aforementioned antibodies, and a cell comprising the vector comprising a nucleic acid coding for one of the aforementioned antibody fragments and, optionally, suitable additives or auxiliaries.

[017] The accession numbers of the polypeptides according to the invention and their cDNAs are shown in Table 2A to 2D.

[018]

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[047] **Table 2A to 2D: Polypeptides and cDNAs with their respective SEQ ID numbers and accession numbers from the GenBank database.**

[048]

**Table 2A**

<b>Gene</b>	<b>Polypeptide (SEQ ID)</b>	<b>Accession number</b>	<b>DNA (SEQ ID)</b>	<b>Accession number</b>
PI4K2	1	NP_060895	94	NM_018425
ZNF216	2	NP_005998	95	NM_006007
AKR1C1	3	NP_001344	96	NM_001353
dUT	4	NP_001939	97	NM_001948
PACE4	5	NP_002561	98	NM_002570
BIGH3	6	NP_000349	99	NM_000358
PRKAR1A	7	NP_002725	100	NM_002734
s.t. Ocia	8	NP_060300	101	NM_017830
SDCCAG28	9	NP_006636	102	NM_006645
PRDX1	10	NP_002565	103	NM_002574
TMP21	11	NP_006818	104	NM_006827
IQGAP2	12	NP_006624	105	NM_006633
Rab2	13	NP_002856	106	NM_002865
ARF1	14	NP_001649	107	NM_001658
HSPC1	15	NP_005339	108	NM_005348
TLR5	16	NP_003259	109	NM_003268
GAP-SH3	17	NP_005745	110	NM_005754
Crisp-3	18	NP_006052	111	NM_006061
TM4SF4	19	NP_004608	112	NM_004617

AQP9	20	NP_066190	113	NM_020980
LOC51716	21	NP_057364	114	NM_016280
Cystatin	22	NP_000091	115	NM_000100
Ki	23	NP_005780	116	NM_005789

[049]

[050]

[051]

Table 2B

Gene	Polypeptide (SEQ ID)	Accession number	DNA (SEQ ID)	Accession number
Porimin	24	NP_443164	117	NM_052932
PTPRZ1	25	NP_002842	118	NM_002851
Rab9 effector p40	26	NP_005824	119	NM_005833
RBap48	27	NP_005601	120	NM_005610
PABPC1	28	NP_002559	121	NM_002568
NF1/B2	29	NP_005587	122	NM_005596
RPL7	30	NP_000962	123	NM_000971
HNRPDL	31	NP_005454	124	NM_005463
OBCL6	32	novel	125	novel
SNRPG	33	NP_003087	126	NM_003096
KREV-1	34	NP_002875	127	NM_002884
DRB5	35	NP_003833	128	NM_003842
PKCI-1	36	NP_005331	129	NM_005340
IMPACT	37	NP_060909	130	NM_018439
BMI	38	NP_005171	131	NM_005180
G3BP	39	NP_005745	132	NM_005754
RHEB2	40	NP_005605	133	NM_005614
MARCKS	41	NP_002347	134	NM_002356
ALURBP	42	NP_003124	135	NM_003133
PPGB	43	NP_000299	136	NM_000308
GRB2	44	NP_002077	137	NM_002086

TRAP1	45	NP_057376	138	NM_016292
PDHB	46	NP_000916	139	NM_000925
DAD-1	47	NP_001335	140	NM_001344
PSME2	48	NP_002809	141	NM_002818
QP-C	49	NP_006285	142	NM_006294
MTRPS33	50	NP_444263	143	NM_053035

[052]

Table 2C

Gene	Polypeptide (SEQ ID)	Accession number	DNA (SEQ ID)	Accession number
ARF4	51	NP_001651	144	NM_001660
DDB1	52	NP_001914	145	NM_001923
GNG10	53	NP_004116	146	NM_004125
DP1	54	NP_002810	147	NM_002819
ATP1B1	55	NP_001668	148	NM_001677
SLC25A3	56	NP_002626	149	NM_002635
SNC6	57	NP_003923	150	NM_003932
OMG	58	NP_002535	151	NM_002544
PB1S	59	NP_002784	152	NM_002793
RPS21	60	NP_001015	153	NM_001024
MMP-2	61	NP_004521	154	NM_004530
YWHAZ	62	NP_663723	155	NM_145690
PPP3R1	63	NP_671709	156	NM_147180
CTNNA1	64	NP_001894	157	NM_001903
ADCYAP1	65	NP_001108	158	NM_001117
syntenin	66	NP_005616	159	NM_005625
topoisomerase IIb	67	NP_001059	160	NM_001068
UMP-CMPK	68	NP_057392	161	NM_016308
PSMD4	69	NP_722544	162	NM_153822
hu_BTF3	70	NP_001198	163	NM_001207
rhoA	71	NP_001655	164	NM_001664

LDH-B	72	NP_002291	165	NM_002300
TBXA2-R	73	NP_001051	166	NM_001060
hu_CAP	74	NP_006357	167	NM_006366
hu_PP2a-cat	75	NP_002706	168	NM_002715
SDHC	76	NP_002992	169	NM_003001

[053]

**Table 2D**

Gene	Polypeptide (SEQ ID)	Accession number	DNA (SEQ ID)	Accession number
hu_GDP-di2	77	NP_001166	170	NM_001175
CCNI	78	NP_006826	171	NM_006835
Mac25	79	NP_001544	172	NM_001553
TBP	80	NP_003185	173	NM_003194
FDX1	81	NP_004100	174	NM_004109
NLVCF	82	NP_003767	175	NM_003776
GNG3	83	NP_036334	176	NM_012202
RCN2	84	NP_002893	177	NM_002902
hu_adk2	85	NP_001616	178	NM_001625
hu_Dcsa19	86	NP_009035	179	NM_007104
c/EBP	87	NP_001797	180	NM_001806
Rab GG	88	NP_004573	181	NM_004582
**c-syn-1	89	NP_002028	182	NM_002037
**c-syn-2	90	NP_694592	183	NM_153047
**c-syn-3	91	NP_694593	184	NM_153048
PPP1R15A	92	NP_055145	185	NM_01433
SCL5A6	93	NP_066918	186	NM_021095

[054] [(\*\*c-syn represents three alternative nucleotide transcripts with corresponding three protein products]

[055]

[056] A subset of these nucleic acids according to the invention have been shown by RT-PCR analysis to be specifically expressed or deregulated in other cancers of epithelial origin and preferably not in corresponding normal human tissue(s). These nucleic acids

include SEQ ID Nos. 94 to 186 (provided in Table 2A to 2D). Deregulated nucleic acids in liver cancer may preferably be highly relevant to other cancers of the gastrointestinal tract as these tissues share a common embryological origin. Consequently, these nucleic acids and the encoded polypeptides may preferably be similarly utilized for diagnostics methods, pharmaceutical compositions and methods of prevention and/or treatment of these epithelial cancers.

[057] The polypeptides and nucleic acids according to the invention have in common that they are differentially expressed in a sample isolated from a patient suffering from a disorder according to the invention compared to a reference sample. The regulation of the polypeptides and nucleic acids according to the invention is essential for the pathologic process and which are thus in a direct or indirect relationship with diagnosis, prevention and/or treatment of disorders according to the invention. The polypeptides and the nucleic acids according to the invention do not belong to the targets known until now such that surprising and completely novel approaches for diagnosis and therapy result from this invention.

[058] Generally, the analysis of differentially expressed genes in tissues is less likely to result in errors in the form of artifactual false-positive clones than the analysis of cell culture systems. In addition to the fact that existing cell culture systems cannot adequately simulate the complexity of pathological processes in the tissue, the variations in cell behavior in the culture environment lead to nucleic acid and polypeptide expression patterns with questionable relation to the actual pathologic state. These problems may be less pronounced by an approach that utilizes gene expression in normal and diseased human tissue but again multiple variables confound clear identification of differential gene expression that is directly relevant to disease. For example, differentially expressed nucleic acids may result from inter-individual differences, metabolic state and/or clinical treatment paradigm. Further, large scale gene expression studies using cDNA microarrays do not indicate the cellular source of variation in gene expression. In addition, a differential gene expression study including all or most genes produces a very large volume of data that confounds identification of key disease-associated gene expression changes. Consequently, an approach that includes large scale profiling of gene expression from tissue from liver disorders that are defined only generally (as for example, "liver tumors") is unlikely to illuminate key genes involved in the disease process and it is these key genes that represent best targets for diagnostics and therapeutic intervention.

[059] On account of these difficulties, the success of the screening is significantly dependent on the choice of the experimental parameters. While the methods used are based on established procedures, the screening and verification strategy is already inventive *per se* owing to the elaborate and defined choice of parameters. A unique



approach employed in this invention utilizes discrete, pathologist-confirmed liver cancer pathologies for production of disease specific cDNA libraries enriched in nucleic acids specifically up- and down-regulated in HCC compared with a pool of non-neoplastic human livers. Non-diseased reference liver samples for the experiments are also diagnostically confirmed and pooled from 3 independent samples to reduce detection of false positives resulting from inter-individual variations. Nucleic acids commonly expressed at similar levels in the reference liver pool and in diseased liver (i.e., HCC) are removed by the generation of subtractive suppressive hybridization (SSH) cDNA libraries (Diatchenko et al., 1996, Proc. Natl. Acad. Sci. USA, 93:6025-6030). These cDNAs are highly enriched for nucleic acids both up- and down-regulated in HCC but do not represent those that are not differentially expressed. Each of several thousand SSH clones were amplified by the polymerase chain reaction (PCR) and affixed to glass slides in custom cDNA microarrays. RNA from additional pathologist-confirmed liver disorders is converted to fluorescently-labeled cDNA for competitive hybridization with the pooled non-diseased liver RNA on the microarrays. The resulting ratio of hybridization intensity reveals nucleic acids specifically deregulated in liver disorders. In addition to providing a pool of candidate cDNAs highly enriched for differentially expressed genes, the SSH library represents on a genome-wide scale most if not all differentially expressed genes with far fewer clones than in standard cDNA libraries. This feature thereby focuses on nucleic acids specifically deregulated in disease. The SSH libraries generated in this invention include cDNA clones from nucleic acids that are essentially not expressed in normal liver and thereby not represented in conventional cDNA libraries or on genome-scale cDNA microarrays.

[060] Overexpression of the sequences according to the invention in liver disorder tissue compared to normal liver is confirmed by independent analysis of RNA levels with sequence-specific quantitative RT-PCR (Q-PCR). In these verification experiments, PCR product corresponding to the cellular RNA levels of the sequences according to the invention are monitored by fluorescent detection of the specific PCR product. The fluorescent signal is provided either by a sequence specific hydrolysis probe oligonucleotide (primer) in the TaqMan/Assay-on-Demand procedure (Figure 100 to 103) or by a fluorescent double stranded DNA binding dye such as SYBR green (Figure 104). Levels of PCR products corresponding to the sequences according to the invention are normalized for experimental variability by comparison with the levels of 'housekeeping' genes including  $\beta$ -actin, which are considered relatively invariant in disease or following experimental manipulations. The reference gene primers used for TaqMan Q-PCR analyses are GAPDH-p1, (SEQ ID 187); GAPDH-p2, (SEQ ID 188); GAPDH-p3, (SEQ ID 189);  $\beta$ Actin-p1, (SEQ ID 190);  $\beta$ Actin-p2, (SEQ ID 191); and

$\beta$ Actin-p3, (SEQ ID 192). The reference gene primers used for SYBR Green analyses are  $\beta$ Actin-p4, (SEQ ID 193); and  $\beta$ Actin-p5, (SEQ ID 194). The determination of RNA levels relative to these housekeeping genes in Q-PCR experiments is performed according to the method of Pfaffl (Nucleic Acids Research, 2001, 29(9):e45). These techniques are well known to a person skilled in the art.

[061] Furthermore, expression of HCC deregulated genes according to this invention correlates with proliferation of hepatoma cells (Hep3B, HepG2) following for example 8 hours and 12 hours serum stimulation of quiescent cells. This finding supports the suggestion that overexpression of the sequences according to the invention is functionally significant for proliferative liver disorders such as liver cancer.

[062] Compared to the state of the art, these polypeptides and nucleic acids surprisingly allow improved, more sensitive, earlier, faster, and/or non-invasive diagnosis of the liver disorders and/or epithelial cancers. The nucleic acids and polypeptides according to the invention can be utilized for the diagnosis, prevention and treatment of liver disorders, and epithelial cancers.

[063] The present invention relates to at least one polypeptide comprising a sequence according to one of the SEQ ID 1 to SEQ ID 93, or a functional variant thereof. The invention also relates to a nucleic acid coding for the polypeptide or a functional variant thereof.

[064] In preferred embodiment the polypeptide consists of the sequence according to the SEQ ID 1. In another preferred embodiment the nucleic acid consists of the sequence according to the SEQ ID 94.

[065] Compared to the state of the art, these polypeptides and nucleic acids surprisingly allow improved, more sensitive, earlier, faster, and/or non-invasive diagnosis of the liver disorders and/or epithelial cancers.

[066] In another aspect of the invention the invention relates to the use of at least one polypeptide according to the SEQ ID 1 to SEQ ID 93, a functional variant of the polypeptide, a nucleic acid encoding one of the aforementioned polypeptides, a nucleic acid encoding the functional variant, a variant of one of the aforementioned nucleic acids, a nucleic acid which is a non-functional mutant variant of one of the aforementioned nucleic acids, a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, a vector comprising one of the aforementioned nucleic acids, a cell comprising one of the aforementioned nucleic acids, a cell comprising the aforementioned vector, an antibody directed against one of the aforementioned polypeptides, an antibody directed against a functional variant of one of the aforementioned polypeptides, a fragment of one of the aforementioned antibodies, a vector comprising a nucleic acid coding for one of the aforementioned antibodies, a vector comprising a nucleic acid coding for one of the aforementioned antibody fragments, a

cell comprising the vector comprising a nucleic acid coding for one of the aforementioned antibodies, and/or at least one cell comprising the vector comprising a nucleic acid coding for one of the aforementioned antibody fragments, for the diagnosis, prevention and/or treatment of disorders according to the invention. Further embodiments of the invention are described in detail below.

[067] When compared to the state of the art of therapy of liver disorders, and/or epithelial cancers the use of these components surprisingly provide an improved, sustained and/or more effective diagnosis, prevention and/or treatment of disorders according to the invention.

[068] The term "polypeptide" refers to the full length of the polypeptide according to the invention. In a preferred embodiment the term "polypeptide" also includes isolated polypeptides and polypeptides that are prepared by recombinant methods, e.g. by isolation and purification from a sample, by screening a library and by protein synthesis by conventional methods, all of these methods being generally known to the person skilled in the art. Preferably, the entire polypeptide or parts thereof can be synthesized, for example, with the aid of the conventional synthesis such as the Merrifield technique. In another preferred embodiment, parts of the polypeptides according to the invention can be utilized to obtain antisera or specific monoclonal antibodies, which may be used to screen suitable gene libraries prepared to express the encoded protein sequences in order to identify further functional variants of the polypeptides according to the invention.

[069] The term "polypeptide according to the invention" refers to the polypeptides according to the SEQ ID 1 to SEQ ID 93 (Table 2A to 2D).

[070] The term "functional variants" of a polypeptide within the meaning of the present invention refers to polypeptides which have a sequence homology, in particular a sequence identity, of about 70%, preferably about 80%, in particular about 90%, especially about 95%, most preferred of 98 % with the polypeptide having the amino acid sequence according to one of the SEQ ID 1 to SEQ ID 93. Such functional variants are, for example, the polypeptides homologous to a polypeptide according to the invention, which originate from organisms other than human, preferably from non-human mammals such as, for example mouse, rats, monkeys and pigs. Other examples of functional variants are polypeptides that are encoded by different alleles of the gene, in different individuals, in different organs of an organism or in different developmental phases.

[071] Functional variants, for example, also include polypeptides that are encoded by a nucleic acid which is isolated from non-liver-tissue, e.g. embryonic tissue, but after expression in a cell involved in liver disorders have the designated functions. Functional variants preferably also include naturally occurring or synthetic mutations,

particularly mutations that quantitatively alter the activity of the peptides encoded by these sequences. Further, such variants may preferably arise from differential splicing of the encoding gene.

[072] "Functional variants" refer to polypeptides that have essentially the same biological function(s) as the corresponding polypeptide according to the invention. Such biological function can be assayed in a functional assay.

[073] In order to test whether a candidate polypeptide is a functional variant of a polypeptide according to the invention, the candidate polypeptide can be analyzed in a functional assay generally known to the person skilled in the art, which assay is suitable to assay the biological function of the corresponding polypeptide according to the invention. Such functional assay comprise for example cell culture systems; enzymatic assays, the generation of mice in which the genes are deleted ("knocked out") or mice that are transgenic for gene encoding the candidate polypeptide, etc. If the candidate polypeptide demonstrates or directly interferes with essentially the same biological function as the corresponding polypeptide according to the invention, the candidate polypeptide is a functional variant of the corresponding polypeptide, provided that the candidate polypeptide fulfills the requirements on the level of % sequence identity mentioned above.

[074] Furthermore, the term "functional variant" encompasses polypeptides that are preferably differentially expressed in patients suffering from liver disorders, or other epithelial cancers relative to a reference sample or a reference library, including polypeptides expressed from mutated genes or from genes differentially spliced, provided that the candidate functional variant polypeptide fulfills the criteria of a functional variant on the level of % sequence identity. Such expression analysis can be carried out by methods generally known to the person skilled in the art.

[075] "Functional variants" of the polypeptide can also be parts of the polypeptide according to the invention with a length of at least from about 7 to about 1000 amino acids, preferably of at least 10 amino acids, more preferably at least 20, most preferred at least 50, for example at least 100, for example at least 200, for example at least 300, for example at least 400, for example at least 500, for example at least 600 amino acids provided that they have essentially the same biological function(s) as the corresponding polypeptide according to the invention. Functional variants, such as in fusion proteins, may contain either on one or both ends additional amino acid stretch(es), preferably 1 to 50 amino acids, more preferably 20 amino acids. Also included are deletions of the polypeptides according to the invention, in the range from about 1-30, preferably from about 1-15, in particular from about 1-5 amino acids provided that they have essentially the same biological function(s) as the corresponding polypeptide according to the invention. For example, the first amino acid

methionine can be absent without the function of the polypeptide being significantly altered. Also, post-translational modifications, for example lipid anchors or phosphoryl groups may be present or absent in variants.

- [076] "Sequence identity" refers to the degree of identity (% identity) of two sequences, that in the case of polypeptides can be determined by means of for example BLASTP 2.0.1 and in the case of nucleic acids by means of for example BLASTN 2.0.14, wherein the Filter is set off and BLOSUM is 62 (Altschul et al., 1997, *Nucleic Acids Res.*, 25:3389-3402).
- [077] "Sequence homology" refers to the similarity (% positives) of two polypeptide sequences determined by means of for example BLASTP 2.0.1 wherein the Filter is set off and BLOSUM is 62 (Altschul et al., 1997, *Nucleic Acids Res.*, 25:3389-3402).
- [078] The term "liver disorder" refers to and comprises all kinds of disorders that preferably affect the anatomy, physiology, metabolic, and/or genetic activities of the liver, that preferably affect the generation of new liver cells, and/or the regeneration of the liver, as a whole or parts thereof preferably transiently, temporarily, chronically or permanently in a pathological way. Preferably also included are inherited liver disorders and neoplastic liver disorders. Liver disorder is further understood to preferably comprise liver disorders caused by trauma, intoxication, in particular by alcohol, drugs or food intoxication, radiation, infection, cholestasis, immune reactions, and by inherited metabolic liver diseases. Preferred examples of liver disorders include cirrhosis, alcoholic liver disease, chronic hepatitis, Wilson's Disease, and haemochromatosis. Preferably further included are autoimmune-disorders wherein the autoimmune response is directed against at least one polypeptide according to the invention. Within the meaning of the present invention the term "liver disorder" preferably also encompasses liver cancer, for example hepatocellular carcinoma (HCC), benign liver neoplasms such as adenoma and/or FNH. Preferably HCC further comprises subtypes of the mentioned disorders, preferably including liver cancers characterized by intracellular proteinaceous inclusion bodies, HCCs characterized by hepatocyte steatosis, and fibrolamellar HCC. For example, precancerous lesions are preferably also included such as those characterized by increased hepatocyte cell size (the "large cell" change), and those characterized by decreased hepatocyte cell size (the "small cell" change) as well as macro regenerative (hyperplastic) nodules (Anthony, P. in MacSween et al, eds. *Pathology of the Liver*, 2001, Churchill Livingstone, Edinburgh).
- [079] The term "epithelial cancer" within the meaning of the invention includes adenocarcinomas of any organ other than the liver, preferably of the lung, stomach, kidney, colon, prostate, skin and breast, and refers to disorders of these organs in which epithelial cell components of the tissue are transformed resulting in a malignant tumor

identified according to the standard diagnostic procedures as generally known to a person skilled in the art.

- [080] Within the meaning of the invention the term "disorder according to the invention" encompasses epithelial cancer and liver disorders as defined above.
- [081] In the case of polypeptides, the term "differential expression of a polypeptide" refers to the relative level of expression of the polypeptide in an isolated sample from a patient compared to the expression of the polypeptide in a reference sample or a reference library. The expression can be determined by methods generally known to the person skilled in the art. Examples of such methods include immunohistochemical or immunoblot or ELISA detection of the polypeptide with antibodies specific for the polypeptide. Detection of the polypeptide through genetic manipulation to label the polypeptide and detection in a model system is preferably also included such as by tagging the polypeptide in a transgene for expression in a model system.
- [082] The term "sample" refers to a biomaterial comprising liver tissue or liver cells, also tissue from another organ subject to malignant transformation or a cell from this organ, blood, serum, plasma, ascitic fluid, pleural effusions, cerebral spinal fluid, saliva, urine, semen or feces.
- [083] The sample can be isolated from a patient or another subject by means of methods including invasive or non-invasive methods. Invasive methods are generally known to the skilled artisan and comprise for example isolation of the sample by means of puncturing, surgical removal of the sample from the opened body or by means of endoscopic instruments. Minimally invasive and non-invasive methods are also known to the person skilled in the art and include for example, collecting body fluids such as blood, serum, plasma, ascitic, pleural and cerebral spinal fluid, saliva, urine, semen, and feces. Preferably the non-invasive methods do not require penetrating or opening the body of a patient or subject through openings other than the body openings naturally present such as the mouth, ear, nose, rectum, urethra, and open wounds.
- [084] The term "minimally invasive" procedure refers to methods generally known, especially by persons skilled in the art, for obtaining patient sample material that do preferably not require anesthesia, can be routinely accomplished in a physician office or clinic and are either not painful or only nominally painful. The most common example of a minimally invasive procedure is venupuncture.
- [085] The term "reference sample" refers to a sample that serves as an appropriate control to evaluate the differential expression of a nucleic acid and/or a polypeptide according to the invention in a given sample isolated from a patient; the choice of such appropriate reference sample is generally known to the person skilled in the art. Examples of reference samples include samples isolated from a non-diseased organ or tissue or cell(s) of the same patient or from another subject, wherein the non-diseased

organ or tissue or cell(s) is selected from the group consisting of liver tissue or liver cells, blood, or the samples described above. For comparison to expression in the sample isolated from a patient with the liver disorder, the reference sample may also include a sample isolated from a non-diseased organ or tissue or cell(s) of a different patient, wherein the liver disordered- tissue or cell(s) is selected from the sample group listed above. Moreover the reference may include samples from healthy donors, preferably matched to the age and sex of the patient.

- [086] The term "reference library" refers to a library of clones representing expressed genes, which library is preferably prepared from non-diseased liver tissue or cells. The reference library may also derive from mRNA from non-diseased liver tissue or cells and may also comprise a data base comprising data on non-diseased tissue expression of nucleic acids. For comparison of the expression of the nucleic acids or polypeptides according to the invention in a sample isolated from a patient with the disordered liver, the reference library may comprise an expression library prepared from liver disorder-diseased liver tissue or cells and a data base comprising data on liver disorder-specific expression of nucleic acids.
- [087] The term "patient" within the meaning of the invention includes animals, preferably mammals, and humans, dead or alive. The patient is either suffering from a liver disorder, and/or other epithelial cancer, subject to analysis, preventive measures, therapy and/or diagnosis in the context of liver disorder and/or other epithelial cancer.
- [088] The term "subject" within the meaning of the invention includes animals, preferably mammals, and humans, dead or alive that is not suffering from a liver disorders and/or other epithelial cancer and thus represent a preferred appropriate control for the determination of differential expression of nucleic acids and/or polypeptides according to the invention in a patient.
- [089] The term "effective treatment" within the meaning of the invention refers to a treatment that preferably cures the patient from at least one disorder according to the invention and/or that improves the pathological condition of the patient with respect to at least one symptom associated with the disorder, preferably 3 symptoms, more preferably 5 symptoms, most preferably 10 symptoms associated with the disorder; preferably on a transient, short-term (in the order of hours to days), long-term (in the order of weeks, months or years) or permanent basis, wherein the improvement of the pathological condition may be preferably constant, increasing, decreasing, continuously changing or oscillatory in magnitude as long as the overall effect is a significant improvement of the symptoms compared with a control patient. Therapeutic efficacy and toxicity, e.g.  $ED_{50}$  and  $LD_{50}$  may be determined by standard pharmacological procedures in cell cultures or experimental animals. The dose ratio between therapeutic and toxic effects is the therapeutic index and may be expressed by the ratio

LD<sub>50</sub>/ED<sub>50</sub>. Pharmaceutical compositions that exhibit large therapeutic indexes are preferred. The dose must be adjusted to the age, weight and condition of the individual patient to be treated, as well as the route of administration, dosage form and regimen, and the result desired, and the exact dosage should of course be determined by the practitioner.

- [090] The actual dosage depends on the nature and severity of the disorder being treated, and is within the discretion of the physician, and may be varied by titration of the dosage to the particular circumstances of this invention to produce the desired therapeutic effect. However, it is presently contemplated, that pharmaceutical compositions comprising of from about 0.1 to 500 mg of the active ingredient per individual dose, preferably of from about 1 to 100 mg, most preferred from about 1 to 10 mg, are suitable for therapeutic treatments.
- [091] The active ingredient may be administered in one or several dosages per day. A satisfactory result can, in certain instances, be obtained at a dosage as low as 0.1 mg/kg intravenously (i.v.) and 1 mg perorally (p.o.). Preferred ranges are from 0.1 mg/kg/day to about 10 mg/kg /day i.v. and from 1 mg/kg/day to about 100 mg/kg/day p.o.
- [092] In another aspect the invention relates to a fusion protein comprising a polypeptide according to the SEQ ID 1 to 93, or a functional variant thereof.
- [093] A "fusion protein" refers to a polypeptide comprising at least one polypeptide according to the SEQ ID 1 to SEQ ID 93, a functional variant or part thereof and at least one component A selected from polypeptide, peptide and/or peptide analogue that is linked to the polypeptide according to the invention by means of covalent or non-covalent binding such as e.g. hydrogen bonds, generally known to the person skilled in the art. Preferred examples of component A for fusion proteins are polypeptide, peptide and/or peptide analogues that facilitate easier detection of the fusion proteins; these are, for example, "green-fluorescent-protein", or variants thereof. Also included are fusion proteins that facilitate purification of the recombinant protein such as "His-tags", or fusions that increase the immunogenicity of the protein.
- [094] Fusion proteins according to the invention can be produced by methods generally known to the person skilled in the art. The fusion proteins according to the invention can be used for the diagnosis, prevention and or treatment of liver disorders and/or epithelial cancer.
- [095] Compared to the state of the art, these fusion proteins surprisingly allow improved, more sensitive, earlier, faster, and/or non-invasive diagnosis and/or improved, sustained and/or more effective treatment of the liver disorders and/or epithelial cancers.
- [096] Preferred nucleic acids according to the invention comprise a sequence according to one of SEQ ID 94 to SEQ ID 186, or a variant thereof. In particular the invention



relates to nucleic acids according to the invention that have been isolated.

- [097] Compared to the state of the art, these nucleic acids and polypeptides surprisingly allow improved, more sensitive, earlier, faster, and/or non-invasive diagnosis and/or improved, sustained and/or more effective treatment of the liver disorders and/or epithelial cancers.
- [098] The term "nucleic acid according to the invention" refers to the nucleic acids corresponding to the SEQ ID 94 to SEQ ID 186 and/or variants thereof.
- [099] The term "encoding nucleic acid" relates to a DNA sequence that codes for an isolatable bioactive polypeptide according to the invention or a precursor thereof. The polypeptide can be encoded by a sequence of full length or any part of the coding sequence as long as the biological function, such as for example receptor-activity, is essentially retained (cf. definition of functional variant).
- [100] It is known that small alterations in the sequence of the nucleic acids described above can be present, for example, due to the degeneration of the genetic code, or that untranslated sequences can be attached to the 5' and/or 3' end of the nucleic acid without significantly affecting the activity of the encoded polypeptide. This invention, therefore, also comprises so-called naturally occurring and artificially generated "variants" of the nucleic acids described above.
- [101] Preferably, the nucleic acids used according to the invention are DNA or RNA, preferably a DNA, in particular a double-stranded DNA. In particular the nucleic acid according to the invention may be an RNA molecule, preferably single-stranded or a double-stranded RNA molecule. The sequence of the nucleic acids may further comprise at least one intron and/or one polyA sequence.
- [102] Nucleic acids according to the invention can be produced by methods generally known to the skilled artisan and have also been described in detail below.
- [103] "Variant" within the meaning of the invention refers to all DNA sequences that are complementary to a DNA sequence, which hybridize with the reference sequence under stringent conditions and have a similar activity to the corresponding nucleic acid according to the invention. The nucleic acids according to the invention can also be used in the form of their antisense sequence.
- [104] "Variant" of the nucleic acids can also be homologues from other species with sequence identity preferably 80%, in particular 90%, most preferred 95%.
- [105] "Variant" of the nucleic acids can also be parts of the nucleic acid according to the present invention with at least about 8 nucleotides length, preferably with at least about 16 nucleotides length, in particular with at least about 21 nucleotides length, more preferably with at least about 30 nucleotides length, even more preferably with at least about 40 nucleotides length, most preferably with at least about 50 nucleotides length as long as the parts have a similar activity to the corresponding polypeptide according

to the invention. Such a functional activity of an expressed polypeptide encoded by such a nucleic acid can be assayed using the functional assays described further above.

[106] In a preferred embodiment of the invention the nucleic acid comprises a nucleic acid having a sequence complementary to a nucleic acid according to the invention, or a variant thereof. Preferably the nucleic acid comprises a non-functional mutant variant of the nucleic acid according to the invention, or a variant thereof.

[107] In particular the invention relates to a nucleic acid having a complementary sequence wherein the nucleic acid is an antisense molecule or an RNA interference molecule.

[108] The term "non-functional mutant variant of a nucleic acid" refers to a nucleic acid derived from a nucleic acid according to the invention, or a variant thereof having been mutated such that the polypeptide encoded by the non-functional mutant variant of the nucleic acid exhibits a biological activity which in comparison the non-mutated polypeptide is significantly decreased or abolished. Such activity of the polypeptide encoded by the non-functional mutant variant nucleic acid can be determined by means of a functional assay as described above for the evaluation of functional variants. The construction and screening of such non-functional mutant variant derived from a nucleic acid according to the invention are generally known to the person skilled in the art. Such "non-functional mutant variant of a nucleic acid" according to the invention can be expressed in a patient and will preferably abolish or diminish the level of expression of the targeted nucleic acid by competing with the native mRNA molecules for translation into polypeptides by the ribosomes.

[109] "Stringent hybridization conditions" refer to those conditions in which hybridization takes place at 60°C in 2.5 xSSC buffer and remains stable following a number of washing steps at 37°C in a buffer of lower salt concentration.

[110] The term "differential expression of a nucleic acid" refers to the relative level of expression of the nucleic acid in an isolated sample from a patient compared to the expression of the nucleic acid in a reference sample or a reference library. Definitions of reference samples and reference libraries have been described in detail above. The expression can be determined by methods generally known to the person skilled in the art. Examples of such methods include RNA blot (northern) analysis, nuclease protection, in situ hybridization, reverse transcriptase PCR (RT-PCR; including quantitative kinetic RT-PCR). cDNA and oligonucleotide microarrays are also included as such methods.

[111]

[112] Preferred embodiment of the invention relates to the HCC up-regulated phosphatidylinositol 4-kinase type II (PI4K2) polypeptide (Accession. No. NP\_060895, SEQ ID 1) and to the nucleic acid PI4K2 (Accession. No. NM\_018425, SEQ ID 94)

coding for the polypeptide. The prevalent phosphatidylinositol (PtdIns) phosphate kinase activity in many mammalian cell types is conferred by the widespread type 2 kinase (PI4K2). The human type 2 isoform has been partially purified from plasma membrane rafts of human A431 epidermoid carcinoma cells. (Minogue S. et al., 2001. *J Biol Chem.*, 18; 276(20):16635-40. Epub 2001 Feb 13). The predicted amino acid sequence revealed two isoforms: 2alpha and 2beta. The type 2alpha mRNA appears to be expressed ubiquitously in human tissues, and homologues appear to be expressed in all eukaryotes, but the gene encoding this PtdIns family member, however, has not previously been reported to be expressed at elevated levels in disorders according to the invention, in particular in HCC.

- [113] Expression of this mRNA is elevated on average almost 2-fold relative to non-diseased liver in 46% of the HCC cases profiled (see Figure 1, Table 3A). Elevated expression of the encoding mRNA is also evident in FNH (to even a higher extent than in HCC; Figure 9/Table 4A), but not in cirrhotic livers subjected to this cDNA microarray expression profiling procedure (Figure 9 and Table 3A). For this and the other nucleic acids according to the invention, this value for expression includes the expression value ratio data from all of the (28) HCC samples subjected to the cDNA microarray expression profiling experiments, including the values from samples that are not elevated by 2-fold or greater.
- [114] These results should confirm that the differential upregulated expression of the PI4K2 cDNA sequence is highly specific for disorders according to the invention. Therefore the PI4K2 polypeptide and/or the encoding nucleic acid can be utilized for the diagnosis, prevention and treatment of disorders according to the invention
- [115] In another preferred embodiment the nucleic according to the invention is the Zinc finger protein 216, ZNF216 cDNA (SEQ ID 95) which includes the open reading frame encoding ZNF216 polypeptide (SEQ ID 2). The ZNF216 polypeptide (GenBank sequence NP\_005998) is another embodiment of the invention. The ZNF216 gene is identical to the already reported cochlear-expressed gene (Scott DA. et al., 1998, *Gene*, 215(2): 461- 469) that maps to the DFNB7/11 interval for autosomal recessive non-syndromic hearing loss (ARNSHL) located on human chromosome 9q13-q21. Although ZNF216 gene is highly conserved between human and mouse, containing two regions that show homology to the putative zinc finger domains of other proteins, the polypeptide sequence has unknown function. Based on homology to bovine cDNA tag A2, ZNF216 may play a role in development of vessel endothelium from precursor cells suggesting a potential regulatory role in neovascularization. In this line it was recently suggested that ZNF216 and its A20-like zinc finger domain (ZnF-A20) have redundant and distinct role in regulating NF-kappaB activation and apoptosis (Huang J, published online ahead of print January 30, 2004, *J. Biol. Chem.*,

10.1074/jbc.M309491200). The gene encoding this zinc finger family member, however, has not previously been reported to be expressed at elevated levels in disorders according to the invention, in particular in HCC.

- [116] The expression in HCC of RNA corresponding to assembled sequence SEQ ID 95 is confirmed experimentally. The initial sequence upregulated in HCC relative to non-diseased liver identified as an SSH cDNA clone corresponds to GenBank sequence NM\_006007. The expression of sequences of this clone has not previously been reported in liver or in HCC.
- [117] In a preferred embodiment the polypeptide according to the invention is the ZNF216 polypeptide (SEQ ID 2) which is surprisingly identified from an mRNA identified to be upregulated in HCC by an average of 16-fold relative to non-diseased liver (Figure 1) in 54% of the profiled cases (Table 3A). Similarly, elevated expression of the encoding mRNA relative to non-diseased liver is also evident in FNH but not in cirrhotic livers (see Figure 10, Tables 4A/5A).
- [118] cDNA sequences encoding this polypeptide and overlapping with this mRNA might be identified with reverse transcriptase PCR analysis and these nucleic acids can be similarly elevated in HCC. Furthermore, high expression specificity of the ZNF216 cDNA can be confirmed by quantitative assessment (Q-PCR) in HCC, FNH and Cirrhosis in comparison to expression pattern in normal tissue(s). The TaqMan procedure utilizing the parallel examination of both GAPDH and  $\beta$ -actin as reference genes should verify a large over expression of ZNF216 cDNA (SEQ ID 95) in HCC when compared to FNH and Cirrhosis. For TaqMan analyses ZNF 216 expression might be determined with gene specific oligonucleotide primers including ZNF216-p1, 5'-gagaggacaaaataactacc-3', SEQ ID 195 (from nucleotide 611- 631 of SEQ ID 95 forward strand), ZNF216-p2, 5'-caattcaggagcttttctca-3', SEQ ID 196 (from nucleotide 726-705 of SEQ ID 95 reverse strand) and the "hydrolysis" probe ZNF216-pr, 5'-tactgggctgagaaactgatggactgggctga-3' SEQ ID 198 (from nucleotide 694-663 of SEQ ID 95 reverse strand).
- [119] Furthermore, the expression of this HCC-deregulated gene correlates with proliferation of hepatoma cells, showing 2-fold and 3-fold increase of ZNF216 mRNA in Hep3B cell line upon 8 hours and 12 hours serum stimulation of quiescent cells, respectively (see Figure 106).
- [120] These results demonstrate that ZNF216 polypeptide (SEQ ID 2) and the nucleic acid encoding the polypeptide (SEQ ID 95) can be employed in the prevention and therapy of disorders according to the invention, in particular for the treatment of hyperplastic (including neoplastic) liver diseases. With regard to the treatment it is preferred to carry out the treatment such that the expression of the ZNF216 polypeptide or of the nucleic acid encoding the polypeptide is reduced and/or inhibited,

for example by administering antisense oligonucleotides or RNA interference molecules that specifically interact with the nucleic acid encoding the ZNF216 polypeptide. Alternatively the treatment may be carried out such that the activity of the ZNF216 polypeptide is reduced and/or inhibited, for example by administering an antibody directed against the ZNF216 polypeptide or an antibody fragment thereof which block the activity of the ZNF216 polypeptide to a patient in need of such treatment. Compared to the state of the art, this ZNF216 polypeptide and/or ZNF216 nucleic acid surprisingly allow improved, more sensitive, earlier, faster, and/or non-invasive diagnosis and/or improved, sustained and/or more effective.

[121] In another preferred embodiment the nucleic acid according to the invention is the AKR1C1 nucleic acid (SEQ ID 96) that represents the sequence of an HCC deregulated cDNA clone. This gene encodes the Aldo-keto reductase family 1 member C1 sharing high sequence identity with three other gene members and is localized at chromosome 10p15-p14 (Stolz, A. et al, 1993, J. Biol. Chem., 268: 10448-10457). These enzymes catalyze the conversion of aldehydes and ketones to their corresponding alcohols by utilizing NADH and/or NADPH as cofactors. The enzymes display overlapping but distinct substrate specificity and may assist in the rapid intracellular transport of bile acids from the sinusoidal to the canalicular pole of the cell, and thereby having a role in monitoring the intrahepatic bile acid concentration. The AKR1C1 regulates progesterone action by converting the hormone into its inactive metabolite 20 alpha-hydroxyprogesterone, and toxicologically this enzyme activates polycyclic aromatic hydrocarbon trans-dihydrodiols to redox-cycling o-quinones. However, the significance of its potent induction by Michael acceptors and oxidative stress is unknown (Burczynski ME. et al., J Biol Chem., 2001, 276(4): 2890- 2897). Expression of sequences corresponding to this clone has been already reported in several tissues (including liver) and some tumors (including prostate, breast; e.g., Wiebe JP and Lewis MJ., 2003, BMC Cancer, 3(1): 9) but the sequence has not previously been described to be upregulated in HCC.

[122] In liver samples from HCC patients expression of the mRNA encoding this polypeptide is surprisingly elevated relative to non-diseased liver by an average value of 7-fold in 79% cases profiled (Figure 1, Table 3A). Elevated expression of the encoding mRNA relative to non-diseased liver is also evident in FNH but not in cirrhotic livers (Figure 11, Table 4A/5A).

[123] Independent RT-PCR analysis of expression levels of AKR1C1 mRNA in HCC relative to normal liver are determined with gene specific oligonucleotide primers including: AKR1C1-p1, 5'- ttggaaaggtcactgaaaaatct-3' (SEQ ID 199) and AKR1C1-p2, 5'-gctggctgcggttgaagtgg-3' (SEQ ID 200) verifying the specific expression of this gene (SEQ ID 96) in HCCs when compared to normal liver samples (Figure 104).

- [124] Furthermore, the expression of this HCC-deregulated mRNA is showing 2-fold and 5-fold increase by serum stimulation of quiescent hepatoma cells (HepG2) upon 8 hours and 12 hours, respectively (Figure 107).
- [125] The target gene encoded polypeptide enzymatic activity clearly shows the correlation between the upregulation of AKR1C1 gene transcript in HCC with the approximately 2-fold induction of the AKR1C1 enzymatic activity suggesting that elevated expression of this sequence is correlated with human liver tumor cell proliferation (Table 9).
- [126] In yet another preferred embodiment the nucleic acid according to the invention is the dUTP pyrophosphatase, dUT nucleic acid (SEQ ID 97) which has been disclosed before (Accession. No NM\_001948) encoding the dUT polypeptide (Accession. No NP\_001939, SEQ ID 4). dUTP pyrophosphatase involved in nucleotide metabolism produces dUMP (through hydrolysis of dUTP), the immediate precursor of thymidine nucleotides and decreases the intracellular concentration of dUTP so that uracil cannot be incorporated into DNA (McIntosh E.M. et al., 1992; PNAS, 89: 8020-8024). Nuclear DUT- DUT-N (18 kDa) and mitochondrial DUT-M (23 kDa) isoforms of the protein have been identified in humans and arise from the same gene by the alternative use of 5' exons. DUT-N protein and mRNA levels are tightly regulated to coincide with DNA replication. DUT-N is phosphorylated by cyclin-dependent kinases (Ladner R.D., 1996, J. Biol. Chem., 271: 7745-7751). Recently, it has been shown that these isoforms are aberrantly expressed in some cancers (Pugacheva E.N. et al., 2002, Oncogene, 21(30): 4595- 4600) but the gene encoding these isoforms has not previously been reported to be expressed at elevated levels in HCC.
- [127] Expression of the mRNA encoding the dUT polypeptide is induced by an average of 7-fold relative to non-diseased liver in 47% of the HCC cases profiled (Figure 1, Table 3A). Similarly, elevated expression of the encoding mRNA is also evident in FNH by an average 10.6-fold induction relative to non-diseased liver in 40% of the FNH cases profiled but not in the cirrhotic livers (Figure 12, Tables 4A/5A).
- [128] Independent RT-PCR analyses of expression levels of dUT mRNA might be determined with gene specific oligonucleotide primers including primers for TaqMan analysis, for example: dUT-p1: 5'-ccgcgggctacgacctg-3', SEQ ID 201 (from nucleotide 153-169 of the SEQ ID 97 forward strand), dUT-p2, 5'-agccactcttcataacacc-3', SEQ ID 202 (from nucleotide 268-249 of the SEQ ID 97 reverse strand) and fluorescently-labeled probe dUT-pr, 5'-tgtccgttttcacaacagctttctccatagg-3', SEQ ID 203 (spanning bases from 227-197 of the SEQ ID 97 reverse strand).
- [129] Furthermore, a specific high-affinity inhibitor blocks proliferation of hepatoma cells (Hep3B/HepG2); the specific small molecule inhibitor (DMT-dU (5'-O-(4,4'-Dimethoxytrityl)-2'-deoxyuridine; Sigma; No. D7279) (Persson, T. et al.,

1996, Bioorg. Med. Chem., 4: 553-556) stimulates a cytostatic and anti-proliferative response (Figures 108 to 109) in these cells.

- [130] These results should confirm that the differential upregulated expression of the dUT cDNA sequence is highly specific for disorders according to the invention. Therefore the dUT polypeptide and/or the encoding nucleic acid can be utilized for the diagnosis, prevention and treatment of disorders according to the invention.
- [131] Another preferred embodiment of the invention relates to the HCC up-regulated Paired basic amino acid cleaving enzyme 4, PACE4 polypeptide (Accession. No. NP\_002561, SEQ ID 5) and to the nucleic acid PACE4 (Accession. No. NM\_002570, SEQ ID 98) coding for the polypeptide. The protein encoded by this gene belongs to the subtilisin/kexin-like proprotein convertase family while representing a calcium-dependent serine endoprotease that can efficiently cleave precursor proteins at their paired basic amino acid processing sites [consensus site: RX(K/R)R]. Expression of this gene has been already reported in several tissues (including liver) and suggested to play a role in tumor progression (in colon cancer, e.g. Khatib AM. et al., J Biol Chem., 2001, 276(33):30686-30693), but the sequence has not previously been described to be upregulated in HCC.
- [132] Expression of this mRNA is elevated on average by 24-fold relative to non-diseased liver in 57% of the HCC cases profiled (see Figure 1, Table 3A). Elevated expression of the encoding mRNA is also evident in FNH (to a lesser extent than in HCC; Figure 13/Table 4A), but not in cirrhotic livers subjected to this cDNA microarray expression profiling procedure (Figure 13 and Table 5A).
- [133] Taqman RT-PCR analyses of expression levels of PACE4 mRNA (Assay ID Catalogue Number: Hs00159844\_m1, Applied Biosystems, USA, see Table 6) verify and confirm the specific elevation of the PACE4 cDNA (Figure 3A) showing up-regulation in 7/17 HCCs, 3/3 FNHs, in 3/3 Cirrhosis and in 0/3 non-neoplastic livers (NNL).
- [134] Furthermore, the expression of this HCC-deregulated mRNA is showing 2.4-fold and 6.7-fold increase by serum stimulation of quiescent hepatoma cells (HepG2) upon 8 hours and 12 hours, respectively (Figure 107).
- [135] These findings suggest a functionally significant role for PACE4 in disorders according to the invention, especially in HCC. Therefore the PACE4 polypeptide and/or the encoding nucleic acid can be utilized for the diagnosis, prevention and treatment of disorders according to the invention.
- [136] In another preferred embodiment invention relates to the HCC up-regulated Transforming growth factor Beta-induced I, BIGH3 polypeptide (Accession number NP\_000349; SEQ ID 6) and to the nucleic acid BIGH3 (Accession number NM\_000358; SEQ ID 99) coding for the polypeptide. cDNA corresponding to this

mRNA has been identified in cDNA libraries expressed in many tissues but at low levels; and highly expressed in the corneal epithelium. This gene known to be induced by TGF-beta binds specifically to collagens and may regulate cell adhesion (Skonier J. et al., 1994, DNA Cell Biol., 6: 571- 584). BIGH3 gene has been shown to be up-regulated in oesophageal adenocarcinoma tissue (Hourihan RN. et al., 2003, Anticancer Res., 23(1A):161-5), but the sequence has not previously been reported to be up-regulated in disorders according to the invention, in particular in HCC.

- [137] Expression of this mRNA is elevated on average by 5-fold relative to non-diseased liver in 79% of the HCC cases profiled (see Figure 1 and Table 3A). Similar analysis reveals elevated expression of this mRNA in 80% of the FNH cases profiled (Figure 14/Table 4A).
- [138] The HCC induction of the BIGH3 gene is then verified by amplification of the sequence from the cDNA with primer pairs specific to BIGH3 nucleic acid (Assay ID Catalogue Number: Hs00154671\_m1) in the Assay-On-Demand (Applied Biosystems, USA) quantitative PCR method and also confirming that the BIGH3 mRNA is not deregulated in cirrhosis (Figure 100).
- [139] These findings suggest that the BIGH3 polypeptide and/or a functional variant thereof and/or the encoding nucleic acid and/or a variant thereof can be utilized for the diagnosis, prevention and treatment of disorders according to the invention (in particular for the diagnosis of in HCC and FNH).
- [140] In another preferred embodiment the polypeptide according to the invention is the PRKAR1A polypeptide (Accession number NP\_002725; SEQ ID 7) which is surprisingly identified from an mRNA identified to be upregulated in HCC (Accession number NM\_002734; SEQ ID 100). PRKAR1A, a critical component of the cAMP signaling pathway represents a type I regulatory alpha subunit of cAMP-dependent protein kinase, suggested as a dominant negative regulator of transcription in somatic cell hybrids (Sandberg, M. et al., 1987, Biochem. Biophys. Res. Commun., 149:939-945). The inactive form of the enzyme is composed of two regulatory chains and two catalytic chains. Activation by cAMP produces two active catalytic monomers and a regulatory dimer that binds four cAMP molecules (Jones, K.W. et al., 1991, Cell, 66:861-872). Structural information of the protein is not yet obtained. PRKAR1A is likely to be expressed in many tissues. However, the sequence has not previously been reported to be up-regulated in disorders according to the invention, in particular in HCC.
- [141] The mRNA encoding this polypeptide is elevated an average of 3-fold relative to non-diseased liver in 39% HCCs profiled (see Figure 1 and Table 3A) and similarly in FNH, but not in cirrhotic livers (Figure 15 and Tables 4A/5A).
- [142] Independent verification analyses of expression levels of PRKAR1A mRNA might



be determined with gene specific oligonucleotide primers including, for example primer pairs specific to PRKAR1A nucleic acid (Assay ID Catalogue Number: Hs0000267597\_m1) in the Assay-On-Demand (Applied Biosystems, USA) quantitative PCR method.

- [143] These results suggest that the strongly upregulated expression of the PRKAR1A cDNA sequence is highly specific for disorders according to the invention, especially in HCC and FNH. Therefore the PRKAR1A polypeptide and/or the encoding nucleic acid can be utilized for the diagnosis, prevention and treatment of disorders according to the invention.
- [144] In a further preferred embodiment the invention relates to the s.t. Ocia nucleic acid (Accession number NM\_017830; SEQ ID 101) coding for the Ovarian carcinoma immunoreactive antigen, s.t. Ocia polypeptide (Accession number NP\_060300; SEQ ID 8) which may be expressed at low levels in many tissues and known to be elevated in ovarian cancer (Luo LY. et al., 2001, Biochem Biophys Res Commun., 12; 280(1): 401- 406). The gene encoding this putative tumor antigen, however, has not previously been described in liver cancer and not being reported to be expressed at elevated levels in disorders according to the invention, in particular in HCC.
- [145] The mRNA encoding this polypeptide is elevated an average of 2.4-fold relative to non-diseased liver (NL) in 32% HCCs profiled (Figure 1 and Table 3A). mRNA levels are marginally elevated in FNH relative to non-diseased liver (Figure 16 and Table 4A). This mRNA is otherwise detected only infrequently in normal and cirrhotic livers subjected here to expression profiling.
- [146] Independent RT-PCR analyses of expression levels of s.t. Ocia mRNA are determined with gene specific oligonucleotide primers (Assay ID Catalogue Number: Hs00215197\_m1, Applied Biosystems, USA) in the Assay-On-Demand quantitative PCR method confirming that the s.t. Ocia mRNA is not deregulated in cirrhosis (Figure 101/ Table 6).
- [147] These results suggest that the upregulated expression of the s.t. Ocia cDNA sequence is highly specific for disorders according to the invention, especially HCC. Therefore the s.t. Ocia polypeptide and/or the encoding nucleic acid can be utilized for the diagnosis, prevention and treatment of disorders according to the invention, in particular for the diagnosis of HCC and FNH.
- [148] In yet another preferred embodiment the invention relates to the serologically defined colon cancer antigen 28, SDCCAG28 nucleic acid (Accession number NM\_006645; SEQ ID 102). The cDNA clones corresponding to the SDCCAG28 mRNA have been identified in many tissues including colon and other cancers (Scanlan, M.J. et al., 1998, Int. J. Cancer, 76:652-658), but neither this mRNA nor the encoded polypeptide have been previously implicated in disorders according to the

invention, in particular in liver disorders or in HCC. The invention further relates to the polypeptide encoding for the SDCCAG28, a predicted polypeptide of 40.5 kDa (SDCCAG28, SEQ ID 9; NP\_006636 in the GenBank database). The presence of this polypeptide has not been described in any cell or tissue and its function has not been reported, primary sequence suggests similarity to phosphatidylcholine transfer protein 2 (Lai, C.-H., 2000, *Genome Res.*, 10: 703- 713).

- [149] mRNA encoding this polypeptide is elevated an average 3-fold in 71% of the HCCs examined and similarly by nearly 7-fold in FNH (40% cases), all relative to non-diseased liver (Figures 1 and 17, Tables 3A/ 4A).
- [150] Independent RT-PCR analyses of expression levels of SDCCAG28 mRNA are determined with gene specific oligonucleotide primers (Assay ID Catalogue Number: Hs00246405\_m1) as described for the BIGH3 gene, confirming that the SDCCAG28 mRNA is not deregulated in cirrhosis (Figure 3B). The Assay-on-Demand Q-PCR shows upregulation in 8/17 HCCs, 2/3 FNHs, 1/3 Cirrhosis and 0/3 NNL of profiled cases.
- [151] Additionally, expression of this HCC-deregulated gene correlates with proliferation of hepatomacells, showing almost 2-fold and 4- fold increase of SDCCAG28 mRNA in hepatoma cell line (Hep3B) upon 8 hours and 12 hours serum stimulation of quiescent cells, respectively (see Figure 106).
- [152] Furthermore, the protein expression analyses show increase of SDCCAG28 protein signal in HCCs when compared to normal liver (Figure 105). The results support the functional significance of SDCCAG28 for disorders according to the invention, in particular for HCC.
- [153] These data suggest that SDCCAG28 polypeptide and/or the encoding nucleic acid can be utilized for the diagnosis, prevention and treatment of disorders according to the invention.
- [154] In yet another preferred embodiment the nucleic acid according to the invention is the Peroxiredoxin 1 transcript variant 1, PRDX1 nucleic acid (SEQ ID 103) which has been disclosed before (Accession. No. NM\_002574) encoding the PRDX1 polypeptide (Accession. No. NP\_002565; SEQ ID 10), a member of the peroxiredoxin family of antioxidant enzymes (Prxs) that also control cytokine-induced peroxide levels which mediate signal transduction in mammalian cells. Prxs can be regulated by changes to phosphorylation, redox and possibly oligomerization states (Wood, Z.A., et al., 2003, *Trends Biochem. Sci.*, 28 (1): 32- 40). Three transcript variants encoding the same protein have been identified for this gene. The PRDX1 has been shown to be up-regulated in human breast cancer (Noh DY et al., 2001, *Anticancer Res.*, 21 (3B): 2085- 2090). However, neither PRDX1 nucleic acid nor the PRDX1 polypeptide had been recognized with respect to elevated levels in HCC.

- [155] Expression of the mRNA encoding this polypeptide is elevated an average of 3.6-fold relative to non-diseased liver in 71% HCC cases profiled (Figure 1, Table 3A). Elevated expression of the encoding mRNA is also evident in other liver disorders (FNH, Cirrhosis) (Figure 18 and Tables 4A/5A).
- [156] Independent verification analyses of expression levels of PRDX1 mRNA might be determined with gene specific oligonucleotide primers including, for example primer pairs specific to PRDX1 nucleic acid (Assay ID Catalogue Number: Hs00602020\_m1) in the Assay-On-Demand (Applied Biosystems, USA) quantitative PCR method.
- [157] These findings suggest that the PRDX1 polypeptide and/or a functional variant thereof and/or the encoding nucleic acid and/or a variant thereof can be utilized for the diagnosis, prevention and treatment of disorders according to the invention.
- [158] In yet another preferred embodiment the nucleic acid according to the invention is the Transmembrane trafficking protein, TMP21 nucleic acid (SEQ ID 104) which has been disclosed before (Accession. No NM\_006827) encoding the TMP21 polypeptide (Accession No. NP\_006818, SEQ ID 11). Tmp21 is involved in biosynthetic transport from the endoplasmic reticulum to the Golgi complex (Blum,R., et al., 1996, J. Biol. Chem. 271, 17183- 17189). There are two known Tmp21 isoforms -I and -II, wherein hum-Tmp21-II is transcribed, but not translated (Horer J et al., 1999, DNA Seq., 10(2): 121-6). Recent data report that phorbol esters translocate beta2-chimaerin (member of "non-protein kinase C" (PKC) phorbol ester/diacylglycerol receptors family) to the perinuclear region and promote its association with Tmp21-I in a PKC-independent manner (Wang H and Kazanietz MG, J Biol Chem, 2002; 277(6): 4541- 4550). Thus, Tmp21-I might be serving as an anchoring protein that determines the intracellular localization of these novel phorbol ester receptors. The gene encoding both isoforms has not previously been reported to be expressed at elevated levels in disorders according to the invention, in particular in HCC.
- [159] Expression of the mRNA encoding the TMP21 polypeptide is induced by an average of 8.5-fold relative to non-diseased liver in 26% of the HCC cases profiled (Figure 1, Table 3A). Similarly, elevated expression of the encoding mRNA is also evident in FNH but not in the cirrhotic livers (see Figure 19 and Tables 4A/5A).
- [160] Furthermore, the expression of this HCC-deregulated mRNA is showing 2.6-fold and 3.5-fold increase by serum stimulation of quiescent hepatoma cells (HepG2) upon 8 hours and 12 hours, respectively (Figure 107).
- [161] These results show that the differential upregulated expression of the TMP21 cDNA sequence is highly specific for disorders according to the invention. Therefore the TMP21 polypeptide and/or the encoding nucleic acid can be utilized for the diagnosis, prevention and treatment of disorders according to the invention
- [162] In yet another preferred embodiment the nucleic acid according to the invention is

the IQ motif containing GTPase-activating protein 2, IQGAP2 nucleic acid (SEQ ID 105) which has been disclosed before (Accession No. NM\_006633) encoding the IQGAP2 polypeptide (Accession No. NP\_006624, SEQ ID 12). This liver specific protein has been reported to harbor a potential actin binding domain and to interact with calmodulin and Rho family GTPases (Brill S et al., 1996, Mol Cell Biol.; 16(9): 4869-4878). The recent observations identify a physiologic scaffolding function for IQGAP2 representing a functional genomic unit in humans uniquely evolved to regulate thrombin-induced plateletcytoskeletal actin reorganization (Schmidt VA., 2003, Blood, 101(8): 3021-3028), but the gene encoding these isoforms has not previously been reported to be expressed at elevated levels in HCC.

- [163] Expression of the mRNA encoding the IQGAP2 polypeptide is induced by an average of 4-fold relative to non-diseased liver in 71% of the HCC cases profiled (Figure 1, Table 3A). Similarly, elevated expression of the encoding mRNA is also evident in FNH but not in the cirrhotic livers (Figure 20 and Tables 4A/5A).
- [164] The HCC induction of the IQGAP2 gene can then be verified by amplification of the sequence from the cDNA with primer pairs specific to IQGAP2 nucleic acid (Assay ID Catalogue Number: Hs00183606\_m1) in the Assay-On-Demand (Applied Biosystems, USA) quantitative PCR method. These data suggest that the IQGAP2 polypeptide and/or the encoding nucleic acid can be utilized for the diagnosis, prevention and treatment of disorders according to the invention.
- [165] In yet another preferred embodiment the nucleic acid according to the invention is the member of RAS oncogene family, Rab2 nucleic acid (SEQ ID 106) which has been disclosed before (Accession No. NM\_002865) encoding the Rab2 polypeptide (Accession No. NP\_002865, SEQ ID 13). The small GTPase Rab2 is a resident of pre-Golgi intermediates and required for protein transport from the endoplasmic reticulum (ER) to the Golgi complex (Tisdale, E. J. et al., 1992, J. Cell Biol., 119: 749- 761). The Rab2 protein, like all small GTPases, contains conserved GTP-binding domains as well as hypervariable carboxyl-terminal and amino-terminal domains. It is suggested that the NH2 terminus of Rab2 is required for its function and for direct interaction with components of the transport machinery involved in the maturation of pre-Golgi intermediates. Rab2 interacts directly with atypical protein kinase C (aPKC)  $\iota$ /  $\lambda$  and inhibits aPKC  $\iota$ /  $\lambda$ -dependent glyceraldehyde-3-phosphate dehydrogenase phosphorylation (Tisdale, E.J.2003, J Biol Chem.; 278(52):52524-30). Though overexpression in lymphoid and myeloid malignancies has been reported, neither Rab2 nucleic acid nor the Rab2 polypeptide has been recognized with respect to elevated levels in disorders according to the invention, preferably in HCC.
- [166] Expression of the mRNA encoding this polypeptide is elevated an average of 5-fold relative to non-diseased liver in 71% of the HCC cases profiled (Figure 2, Table 3A).

Elevated expression of the encoding mRNA is also evident in FNH but not in cirrhosis (Figure 21 and Tables 4A/ 5A).

[167] Furthermore, the expression of this HCC-deregulated mRNA is 5.5-fold and almost 8-fold increased by serum stimulation of quiescent hepatoma cells (Hep3B) upon 8 hours and 12 hours, respectively (Figure 106).

[168] These findings suggest that the Rab2 polypeptide and/or the encoding nucleic acid can be utilized for the diagnosis, prevention and treatment of disorders according to the invention.

[169] In another preferred embodiment the nucleic according to the invention is the Clone 6 cDNA (OBCL6, SEQ ID 125), which is assembled by identification of overlapping sequences from the non-redundant GenBank sequence databases. The initial EST sequence upregulated in HCC relative to non-diseased liver identified with cDNA microarray analysis shows the highest similarity (almost 100% identical) to human genomic clone AL035420 (human DNA sequence from clone RP4-550H1 on chromosome 20q11.1-11.22 containing a high mobility group protein pseudogene). It may be that extending the length of this HCC-deregulated cDNA sequence will reveal that the corresponding RNA encodes a not yet described human protein. Another alternative is that the encoded polypeptide may result from one of the small open reading frames in this sequence. Even further, this RNA may be not translated into polypeptide but may have functional (e.g., regulatory) properties itself.

[170] Surprisingly the sequence from this mRNA is represented at much higher levels in HCC than in normal human liver. This mRNA is elevated an average of 6-fold or more relative to non-diseased liver in 68% of HCC samples profiled (Table 3B, Figure 3). Clone 6 is also elevated 8-fold or more relative to non-diseased liver in FNHs examined, but not in cirrhosis (Figure 40, Tables 4b/5B). Independent RT-PCR analyses of expression levels of might be determined with gene specific oligonucleotide primers. These results show that the strongly upregulated expression of the Clone 6 cDNA sequence is highly specific for disorders according to the invention, especially in HCC and FNH.

[171] Overexpression of the polypeptide and/or the encoding RNA therefore, may be useful for diagnosis of liver disorders. These results clearly demonstrate that the Clone 6 polypeptide and the nucleic acid (SEQ ID 125) encoding the polypeptide (SEQ ID 32) and a functional variant thereof can be utilized for diagnosis, prevention and treatment of disorders according to the invention, in particular for HCC and FNH.

[172] With regard to the treatment it is preferred to carry out the treatment such that the expression of the OBCL6 polypeptide and/or a functional variant thereof; or of the nucleic acid encoding the polypeptide and/or a functional variant thereof is reduced and/or inhibited, for example by administering antisense oligonucleotides or small in-

terfering RNA molecules that specifically interact with the nucleic acid defined in SEQ ID 125 potentially encoding the OBCL6 polypeptide and/or a functional variant thereof.

- [173] The treatment may be carried out, for example, such that the activity of the Clone 6 polypeptide and/or a functional variant thereof are reduced and/or inhibited, for instance by administering an antibody directed against the OBCL6 polypeptide and/or a functional variant thereof, or an antibody fragment thereof which block the activity of the Clone 6 polypeptide and/or a functional variant thereof to a patient in need of such treatment. Compared to the state of the art, the OBCL6 polypeptide and/or a functional variant thereof; and/or OBCL6 nucleic acid surprisingly allow improved, more sensitive, earlier, faster, and/or non-invasive diagnosis and/or improved, sustained and/or more effective treatment of the liver disorders and/or other epithelial cancer.
- [174] Alternatively, the OBCL6 RNA may be not translated into a polypeptide but may have functional (e.g., regulatory) properties itself. The disease relevance of non-coding regulatory RNAs is now becoming apparent as evidenced, for example, by the role of the non-coding RNA "bantam" involved in cellular proliferation in the eukaryote *Drosophila* (Brennecke J, Hipfner DR, Stark A, Russell RB, Cohen SM. *Cell* (2003) Apr4; 113(1):25-36), and by microRNA-23 that interacts with the transcription factor HES-1 to hinder neuronal differentiation (Kawasaki, H. and Tiara, K. *Nature*, 2003, 423:838-842).
- [175] For example, reduction of the level of Clone 6 RNA (knock-down) in proliferating human hepatoma cells with small interfering RNA (siRNA) oligonucleotides can support a functionally significant role for elevated expression of Clone 6 RNA in liver disorders, especially liver cancer.
- [176] Further aspect of the invention represents an isolated polypeptide comprising a sequence according to the SEQ ID 32 or a functional variant thereof. Another preferred embodiment is a fusion protein, wherein the fusion protein contains the polypeptide according to the SEQ ID 32 or a functional variant thereof.
- [177] Yet another preferred feature of the invention is an isolated nucleic acid according to the SEQ ID 125 or a variant thereof. Further preferred embodiment represents the nucleic acid according to the SEQ ID 125 or a variant thereof, wherein the nucleic acid is a single-stranded or double-stranded RNA.
- [178] Still another aspect of the invention represents a nucleic acid according to the SEQ ID 125 or a variant thereof encoding the polypeptide according to the SEQ ID 32 or a functional variant thereof.
- [179] Yet another feature of the invention is a vector, wherein the vector contains a nucleic acid selected from the group consisting of a nucleic acid according to the SEQ

ID 125 or a variant thereof encoding the polypeptide according to the SEQ ID 32 or a functional variant thereof. The vector is preferably selected from the group consisting of a knock-out gene construct, a plasmid, a shuttle vector, a phagemid, a cosmid, a viral vector, and an expression vector.

[180] Another aspect of the invention represents a cell, wherein the cell contains the nucleic acid according to the SEQ ID 125 or a variant thereof encoding the polypeptide according to the SEQ ID 32 or a functional variant thereof. In another preferred embodiment the cell is transformed with a vector containing a nucleic acid selected from the group consisting of a nucleic acid according to the SEQ ID 125 or a variant thereof encoding the polypeptide according to the SEQ ID 32 or a functional variant thereof. In still further embodiment of the invention the cell is a transgenic embryonic non-human stem cell.

[181] Yet another feature of the invention represents a transgenic non-human mammal, wherein the transgenic non-human mammal contains the nucleic acid according to the SEQ ID 125 or a variant thereof encoding the polypeptide according to the SEQ ID 32 or a functional variant thereof.

[182] Further aspect is an antibody or an antibody fragment thereof, wherein the antibody is directed against the polypeptide according to the SEQ ID 32 or a functional variant thereof, or against a nucleic acid coding for the polypeptide.

[183] The cDNA expression levels relative to a non-diseased liver (NL) reference sample of sequences according to the invention assessed in tissues from human liver disorders, including Hepatocellular Carcinoma (HCC), Focal Nodular Hyperplasia (FNH) and Cirrhosis (Cirrh.) samples are shown in Tables 3A to 3D, 4A to 4D and 5A to 5D, respectively (median of  $\log_2$  values data between diseased and non-diseased samples obtained from competitive hybridisation to custom-made cDNA microarrays). Median represents 50<sup>th</sup> percentile of values for each sequence (SEQ ID 94 to 186) per group (HCC, FNH and Cirrh). Number of the samples profiled and the calculated percentage of valid/detectable signals (% detected) are provided. (\*) annotates duplicates of the HCCs, FNHs, and Cirrh. profiled.

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[196] **Tables 3A to 3D: Summary of c DNA microarray expression level ratios (HCC vs NL).**

**Table 3A**

Gene	Median log <sub>2</sub>	Median-fold induction	HCC microarray hybridizations (No)	Detected (%)
PI4K2	0.75	1.68	28	54
ZNF216	4.01	16.07	28	54
AKR1C1	2.78	6.86	56	79
dUT	2.80	6.96	28	46
PACE4	4.60	24.23	28	57
BIGH3	2.31	4.95	28	79
PRKAR1A	1.73	3.32	56	39
s.t. Ocia	1.29	2.45	56	32
SDCCAG28	1.64	3.12	28	71
PRDX1	1.86	3.63	56	71
TMP21	3.08	8.46	56	27
IQGAP2	2.00	3.99	28	71
Rab2	2.38	5.21	28	71
ARF1	3.12	8.71	28	54
HSPC1	2.19	4.55	56	23
TLR5	1.55	2.93	28	64
GAP-SH3	1.72	3.29	28	71
Crisp-3	1.92	3.77	28	57
TM4SF4	1.70	3.24	56	32
AQP9	1.17	2.25	84	36
LOC51716	0.85	1.80	112	72
Cystatin	3.28	9.70	28	46



Ki	2.55		5.85		28		68
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Table 3B

Gene	Median log <sub>2</sub>	Median-fold induction	HCC microarray hybridizations (No)	Detected (%)
Porimin	3.00	7.97	56	9
PTPRZ1	1.94	3.84	84	13
Rab9 effector p40	3.49	11.26	28	39
RBap48	3.10	8.58	28	50
PABPC1	3.69	12.89	28	61
NF1/B2	0.72	1.65	56	57
RPL7	3.08	8.46	140	19
HNRPDL	1.78	3.44	140	26
OBCL6	2.59	6.02 <sub>std</sub>	28	32
SNRPG	2.39	5.26	56	23
KREV-1	1.51	2.85	28	61
DRB5	1.62	3.08	28	79
PKCI-1	0.62	1.54	28	82
IMPACT	4.03	16.37	28	36
BMI	3.52	11.48	56	16
G3BP	3.40	10.56	28	46
RHEB2	3.31	9.92	28	57
MARCKS	2.68	6.43	56	43
ALURBP	3.01	8.04	28	36
PPGB	2.70	6.49	28	79
GRB2	2.75	6.71	28	43
TRAP1	3.24	9.44	56	20
PDHB	3.05	8.25	28	46

[199]

Table 3C

Gene	Median log <sub>2</sub>	Median-fold induction	HCC microarray hybridizations (No)	Detected (%)
DAD-1	2.02	4.06	56	63
PSME2	2.61	6.11	28	32
QP-C	2.27	4.83	28	79
MTRPS33	2.63	6.20	56	25
ARF4	3.02	8.12	28	36
DDB1	2.23	4.70	28	32
GNG10	1.80	3.49	56	66
DP1	2.68	6.40	56	27
ATP1B1	2.35	5.11	56	39
SLC25A3	2.25	4.75	56	39
SNC6	1.86	3.63	28	61
OMG	2.17	4.51	28	36
PB1S	2.17	4.51	28	36
RPS21	1.75	3.35	112	62
MMP-2	1.80	3.48	28	39
YWHAZ	1.87	3.66	28	89
PPP3R1	1.83	3.56	56	46
CTNNA1	1.11	2.15	112	29
ADCYAP1	0.74	1.67	28	4
syntenin	1.93	3.82	28	79
topoisomerase IIb	2.25	4.76	28	18
UMP-CMPK	1.63	3.09	84	18
PSMD4	2.48	5.59	56	29
hu_BTTF3	1.83	3.57	28	86
rhoA	1.68	3.21	28	68

[200]

**Table 3D**

Gene	Median log <sub>2</sub>	Median-fold induction	HCC microarray hybridization s (No)		Detected (%)
LDH-B	1.58	2.99	56		63
TBXA2-R	1.64	3.12	56		38
hu_CAP	1.58	2.98	28		54
hu_PP2a-cat	1.49	2.82	196		6
SDHC	1.55	2.94	56		36
hu_GDP-di2	1.54	2.90	28		32
CCNI	1.70	3.26	28		64
Mac25	1.58	2.98	28		14
TBP	1.10	2.14	84		39
FDX1	1.79	3.46	28		36
NLVCF	1.34	2.53	56		32
GNG3	1.32	2.49	28		32
RCN2	1.88	3.67	56		25
hu_adk2	1.00	2.00	28		46
hu_Dcsa19	1.54	2.91	28		93
c/EBP	1.64	3.11	84		24
Rab GG	1.29	2.44	28		54
**c-syn	2.24	4.74	56		18
PPP1R15A	1.34	2.54	28		36
SCL5A6	3.70	13.00	28		36

[201]

[202] [(\*\*) c-syn represents three alternative nucleotide transcripts with corresponding three protein products

[203]

[204] **Tables 4A to 4D: Summary of c DNA microarray expression level ratios (FNH**

vs NL).

Table 4A

Gene	Median log <sub>2</sub>	Median-fold induction	FNH microarray hybridizations (No)	Detected (%)
PI4K2	1.97	3.91	5	80
ZNF216	2.86	7.25	5	40
AKR1C1	1.18	2.27	10	70
dUT	3.41	10.60	5	40
PACE4	3.65	12.57	5	60
BIGH3	2.02	4.06	5	80
PRKAR1A	1.71	3.28	10	40
s.t. Ocia	0.48	1.40	10	40
SDCCAG28	2.73	6.61	5	40
PRDX1	0.65	1.57	10	70
TMP21	3.68	12.81	10	20
IQGAP2	2.33	5.01	5	80
Rab2	2.57	5.95	5	60
ARF1	2.07	4.18	5	40
HSPC1	2.19	4.57	10	30
TLR5	1.95	3.86	5	60
GAP-SH3	2.86	7.24	5	60
Crisp-3	1.45	2.73	5	60
TM4SF4	2.07	4.19	10	50
AQP9	0.60	1.51	15	33
LOC51716	0.67	1.59	20	75
Cystatin	2.10	4.28	5	20
Ki	2.14	4.41	5	60

[205]

Table 4B

Gene	Median log <sub>2</sub>	Median-fold	FNH	Detected (%)
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		d induction	microarray hybridizations (No)	
Porimin	NA	NA	10	0
PTPRZ1	2.89	7.43	15	20
Rab9 effector p40	NA	NA	5	0
RBap48	3.54	11.67	5	40
PABPC1	1.81	3.50	5	40
NF1/B2	0.64	1.56	10	70
RPL7	3.67	12.69	25	12
HNRPDL	2.25	4.75	25	16
OBCL6	3.07	8.42	5	40
SNRPG	1.38	2.60	10	20
KREV-1	3.73	13.29	5	80
DRB5	0.82	1.77	5	80
PKCI-1	-0.03	0.98	5	80
IMPACT	NA	NA	5	0
BMI	2.97	7.82	10	10
G3BP	3.60	12.13	5	20
RHEB2	3.28	9.68	5	20
MARCKS	1.75	3.35	10	40
ALURBP	1.15	2.22	5	20
PPGB	2.35	5.10	5	80
GRB2	2.89	7.41	5	20
TRAP1	NA	NA	10	0
PDHB	3.79	13.79	5	60

[206]

Table 4C

Gene	Median log <sub>2</sub>	Median-fold induction	FNH microarray hybridizations (No)	Detected (%)
DAD-1	2.01	4.02	10	60
PSME2	NA	NA	5	0
QP-C	1.15	2.21	5	80
MTRPS33	2.88	7.34	10	10
ARF4	3.78	13.76	5	80
DDB1	2.97	7.86	5	40
GNG10	2.87	7.32	10	70
DP1	2.58	5.97	10	20
ATP1B1	1.70	3.26	10	10
SLC25A3	2.95	7.74	10	30
SNC6	0.76	1.69	5	40
OMG	3.31	9.94	5	60
PB1S	1.39	2.62	5	20
RPS21	1.41	2.65	20	50
MMP-2	4.28	19.41	5	20
YWHAZ	1.00	2.00	5	80
PPP3R1	1.54	2.90	10	30
CTNNA1	2.08	4.24	20	40
ADCYAP1	NA	NA	5	0
syntenin	1.83	3.55	5	80
topoisomerase IIb	2.96	7.75	5	40
UMP-CMPK	3.02	8.11	15	27
PSMD4	1.34	2.53	10	10
hu_BTF3	1.01	2.01	5	80
rhoA	1.16	2.23	5	60

Table 4D

Gene	Median log <sub>2</sub>	Median-fold induction	FNH microarra y hy- bridization s (No)	Detected (%)
LDH-B	1.58	2.99	10	80
TBXA2-R	1.64	3.12	10	40
hu_CAP	1.58	2.98	5	60
hu_PP2a-cat	1.49	2.82	35	11
SDHC	1.55	2.94	10	0
hu_GDP-di2	1.54	2.90	5	40
CCNI	1.70	3.26	5	80
Mac25	1.58	2.98	5	20
TBP	1.10	2.14	15	27
FDX1	1.79	3.46	5	40
NLVCF	1.34	2.53	10	10
GNG3	1.32	2.49	5	80
RCN2	1.88	3.67	10	10
hu_adk2	1.00	2.00	5	80
hu_Dcsa19	1.54	2.91	5	100
c/EBP	1.64	3.11	15	20
Rab GG	1.29	2.44	5	60
**c-syn	2.24	4.74	10	10
PPP1R15A	1.34	2.54	5	20
SCL5A6	3.70	13.00	5	20

[208]

[209] [(\*\*) c-syn represents three alternative nucleotide transcripts with corresponding three protein products

[210]

[211] Tables 5A to 5D: Summary of c DNA microarray expression level ratios (Cirrh. vs NL).

Table 5A

Gene	Median log <sub>2</sub>	Median-fold induction	Cirrh. microarray hybridizations (No)	Detected (%)
PI4K2	-0.23	0.85	8	88
ZNF216	NA	NA	8	0
AKR1C1	-0.72	0.61	16	50
dUT	0.40	1.32	8	13
PACE4	0.68	1.60	8	13
BIGH3	1.04	2.05	8	38
PRKAR1A	0.80	1.74	16	13
s.t. Ocia	0.12	1.09	16	6
SDCCAG28	0.35	1.28	8	25
PRDX1	1.38	2.60	16	44
TMP21	NA	NA	16	0
IQGAP2	0.51	1.42	8	50
Rab2	0.88	1.84	8	25
ARF1	1.24	2.36	8	25
HSPC1	-2.55	0.17	16	19
TLR5	1.08	2.12	8	38
GAP-SH3	1.60	3.04	8	25
Crisp-3	1.06	2.09	8	25
TM4SF4	1.23	2.35	16	25
AQP9	0.80	1.74	24	33
LOC51716	-0.56	0.68	32	66
Cystatin	3.15	8.88	8	25
Ki	1.01	2.01	8	25

[212]

Table 5B

Gene	Median log <sub>2</sub>	Median-fold	Cirrh. microarray	Detected (%)
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		induction	hybridizations (No)	
Porimin	1.13	2.19	16	6
PTPRZ1	1.21	2.32	24	8
Rab9 effector p40	NA	NA	8	0
RBap48	2.46	5.50	8	13
PABPC1	3.47	11.06	8	13
NF1/B2	1.33	2.51	16	44
RPL7	0.98	1.97	40	5
HNRPDL	-0.33	0.80	40	8
OBCL6	NA	NA	8	0
SNRPG	0.17	1.12	16	13
KREV-1	1.64	3.12	8	38
DRB5	0.32	1.25	8	63
PKCI-1	0.71	1.64	8	75
IMPACT	1.68	3.21	8	25
BMI	2.68	6.41	16	19
G3BP	1.60	3.03	8	13
RHEB2	1.04	2.06	8	13
MARCKS	1.77	3.40	16	25
ALURBP	-1.13	0.46	8	13
PPGB	1.66	3.16	8	50
GRB2	2.62	6.14	8	25
TRAP1	3.06	8.33	16	13
PDHB	1.43	2.69	8	38

[213]

[214]

Table 5C

Gene	Median log <sub>2</sub>	Median-fold induction	Cirrh. microarray hybridizations (No)	Detected (%)
DAD-1	1.61	3.05	16	31
PSME2	0.98	1.97	8	38
QP-C	2.87	7.31	8	63
MTRPS33	NA	NA	16	0
ARF4	3.98	15.74	8	13
DDB1	4.11	17.30	8	13
GNG10	1.81	3.51	16	50
DP1	1.33	2.51	16	13
ATP1B1	2.33	5.02	16	19
SLC25A3	0.99	1.99	16	25
SNC6	1.11	2.16	8	50
OMG	1.95	3.87	8	25
PB1S	0.98	1.98	8	38
RPS21	1.16	2.24	32	47
MMP-2	1.00	2.00	8	38
YWHAZ	1.48	2.79	8	75
PPP3R1	1.40	2.64	16	31
CTNNA1	-0.46	0.73	32	22
ADCYAP1	NA	NA	8	0
syntenin	1.26	2.40	8	75
topoisomerase IIb	-0.10	0.93	8	13
UMP-CMPK	1.51	2.85	24	8
PSMD4	-1.63	0.32	16	13
hu_BTF3	1.73	3.33	8	63
rhoA	1.49	2.81	8	50

Table 5D

Gene	Median log <sub>2</sub>	Median-fold induction	Cirrh.micr oarray hy- bridization s (No)	Detected (%)
LDH-B	0.91	1.89	16	75
TBXA2-R	1.05	2.07	16	31
hu_CAP	1.63	3.10	8	25
hu_PP2a-cat	2.13	4.38	56	7
SDHC	NA	NA	16	0
hu_GDP-di2	1.44	2.71	8	50
CCNI	1.12	2.18	8	50
Mac25	1.09	2.13	8	25
TBP	0.76	1.69	24	4
FDX1	1.33	2.52	8	25
NLVCF	1.30	2.47	16	13
GNG3	-0.38	0.77	8	25
RCN2	1.35	2.56	16	6
hu_adk2	1.59	3.00	8	13
hu_Dcsa19	1.29	2.45	8	88
c/EBP	0.25	1.19	24	13
Rab GG	0.56	1.48	8	38
**c-syn	1.62	3.08	16	13
PPP1R15A	0.86	1.81	8	38
SCL5A6	3.95	15.45	8	25

[216]

[217] [(\*\*) c-syn represents three alternative nucleotide transcripts with corresponding three protein products]

[218]

[219] The quantitative assessment of gene expression (SEQ IDs: 102; 99; 101; 106; 98; 96) by RT-PCR (Q-PCR) in Hepatocellular Carcinoma (HCC), Focal Nodular Hyperplasia (FNH) and Cirrhosis (Cirrh) samples is compared to expression pattern in

normal liver (NL), shown in Table 6 (median of  $\log_2$  values). Median represents 50<sup>th</sup> percentile of values for each sequence per group (HCC, FNH and Cirrh). Number of the samples profiled (SDCCAG28, BIGH3, s.t.OClA, Rab2 and PACE4) represent 18 HCC, 3 FNH/Cirrh./NL; and for AKR1C1 7 HCC and 4 NL. Percentage of valid/detectable signals for SEQ IDs 102; 99; 101; 106; 98; 96 (% detected) is equal to 100%, with exception of PACE4 (\*) for which 94.45% HCC cases are detected.

[220]

[221] **Table 6: Summary of differential gene expression levels (SEQ IDs: 102; 99; 101; 106; 98; 96) verified by RT-PCR**

Table 6

Tissue	SDCCAG 28	BIGH3	s.t.OClA	Rab2	PACE4	AKR1C 1
HCC	0.75	1.54	1.6	2.25	0.5*	3.20
FNH	1.29	2.4	2.23	2.63	1.51	NA
Cirrh.	-0.28	0.51	0.83	1.27	1.89	NA
NL	-1.34	0	0.53	0.22	0	0.93

[222]

[223] The quantitative assessment of gene expression of TMF4SF4 and DAD-1 in Hepatocellular Carcinoma (HCC), Focal Nodular Hyperplasia (FNH) and Cirrhosis (Cirrh) samples is compared to expression pattern in normal liver (NL), shown in Tables 7A/7B respectively (median of  $\log_2$  values). Median represents 50<sup>th</sup> percentile of values for each sequence (SEQ ID 112 and SEQ ID 140) per group (HCC, FNH and Cirrh). Median- fold induction is calculated according to following formula: "2<sup>x</sup>" ("x" represents median of  $\log_2$  values). Number of the samples profiled (TM4SF4 and DAD-1 genes) represent 18 HCC, 3 FNH/Cirrh./NL.

[224]

[225] **Table 7A/7B: Summary of differential gene expression levels (SEQ ID 112 and SEQ ID 140) verified by RT-PCR.**

[226] 6

Table 7A

TM4SF4	Median $\log_2$	Median-fold induction	Number of cases profiled
HCC	2.83	7.11	18
FNH	3.81	14.07	3
Cirrh.	2.66	6.30	3

NL		0		1		3
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[227]

**Table 7B**

<b>DAD-1</b>	<b>Median log</b>	<b>Median-fold induction</b>	<b>Number of cases profiled</b>
	<sup>2</sup>		
HCC	0.62	1.54	18
FNH	1.21	2.31	3
Cirr.	0.14	1.10	3
NL	0.20	1.15	3

[228]

[229] In another preferred embodiment of the invention the nucleic acid according to the invention can be used for the construction of antisense oligonucleotides (Zheng and Kemeny, 1995, Clin. Exp. Immunol., 100: 380-382) and/or ribozymes (Vaish et al., 1998, Nucleic Acids Res., 26: 5237-5242; Persidis, 1997, Nat. Biotechnol., 15: 921-922) and/or small interfering double stranded RNAs (Elbashir et al., 2001, Nature, 411: 494-498; Brummelkamp et al., 2002, Science, 296:550-553). In further preferred embodiments of the invention, the stability of the nucleic acid according to the invention can be decreased and/or the translation of the nucleic acid according to the invention inhibited by using RNA interference molecules (oligonucleotides). Thus, for example, the expression of the corresponding genes in cells can be decreased both *in vivo* and *in vitro*. Oligonucleotides can therefore be suitable as therapeutics. This strategy is also suitable, for example, for liver cells, in particular if the antisense oligonucleotides are complexed with liposomes. For use as a probe or as an "antisense" oligonucleotide, a single-stranded DNA or RNA is preferred. Small interfering RNA (siRNA) double stranded oligonucleotides can also be suitable as therapeutics. With this approach a short sequence or sequences of 15 to 22 nucleotides including sequence complementary to the sequence to be therapeutically targeted are exposed to the diseased tissue and serve to dramatically reduce or "knock down" the level of expression of the therapeutic target RNA sequence. siRNA therapeutic approaches in other diseases have been recently reported and are also applicable to liver disorders, liver cancers and other epithelial cancers (Filleur S. et al., Cancer Res., 2003; 63(14): 39-22).

[230] In a preferred embodiment a nucleic acid according to the invention has been prepared by recombinant methods, by screening a library or isolation from a sample obtained from a patient or a subject. In another preferred embodiment of the invention

the nucleic acid according to the invention has been prepared synthetically. Thus, the nucleic acid according to the invention can be synthesized, for example, chemically with the aid of the DNA sequences described in SEQ ID 94 to SEQ ID 186 and/or with the aid of the protein sequences described in SEQ ID 1 to SEQ ID 93 with reference to the genetic code, e.g. according to the phosphotriester method (see, for example, Uhlmann and Peyman, 1990, Chemical Reviews, 90:543-584).

[231] In another preferred embodiment, the invention relates to a nucleic acid according to the invention or a nucleic acid which is a non-functional mutant variant the nucleic acid or a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, which has been modified by attachment of chemical moieties to the nucleic acid to stabilize it against degradation, so that a high concentration of the nucleic acid is maintained in the cell over a long period (Beigelman et al., 1995, Nucleic Acids Res., 23: 3989-94; Dudycz, 1995, WO 95/11910; Macadam et al., 1998, WO 98/37240; Reese et al., 1997, WO 97/29116). Typically, such stabilization can be obtained by the introduction of one or more internucleotide phosphorus groups or by the introduction of one or more non-phosphorus internucleotides.

[232] Preferred suitable modified internucleotides are summarized in Uhlmann and Peymann (1990 Chem. Rev. 90, 544; see also Beigelman et al., 1995 Nucleic Acids Res., 23: 3989-94; Dudycz, 1995, WO 95/11910; Macadam et al., 1998, WO 98/37240; Reese et al., 1997, WO 97/29116).

[233] In a further embodiment the invention relates to a vector comprising a nucleic acid according to the invention and/or a variant thereof, or a nucleic acid which is a non-functional mutant variant of the nucleic acid, or a nucleic acid having a sequence complementary to one the aforementioned nucleic acids. Preferably the vector is a knock-out gene construct, a plasmid, a shuttle vector, a phagemid, a cosmid, a viral vector, an expression vector and/or a vector applicable in gene therapy. The preparation of such constructs is generally known to the person skilled in the art.

[234] An "expression vector" within the meaning of the present invention preferably comprises at least one promoter or enhancer, i.e. at least one regulatory element comprising at least one translation initiation signal, at least one of the nucleic acids according to the invention or a nucleic acid which is a non-functional mutant variant the nucleic acid or a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, one translation termination signal, a transcription termination signal, and a polyadenylation signal for the expression in eukaryotes.

[235] For the expression of the gene concerned, in general a double-stranded DNA is preferred, the DNA region coding for the polypeptide being particularly preferred. In the case of eukaryotes this region begins with the first start codon (ATG) lying in a Kozak sequence (Kozak, 1987, Nucleic. Acids Res., 15: 8125-48) up to the next stop

codon (TAG, TGA or TAA), which lies in the same reading frame to the ATG. In the case of prokaryotes this region begins with the first AUG (or GUG) after a Shine-Dalgarno sequence and ends with the next stop codon (TAA, TAG or TGA), which lies in the same reading frame to the ATG.

- [236] Differentially expressed genes in HCC can contain liver or liver cancer gene-specific regulatory sequences. These non-transcribed sequences, found in the tissue- or disease-specific gene may be used to drive tissue- or disease-specific expression of included therapeutic and/or tumor cell-cytotoxic genes. These regulatory sequences may be used for liver cancer specific expression of a nucleic acid according to the invention or a nucleic acid which is a non-functional mutant variant the nucleic acid or a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids. The screening and construction of such regulatory sequences is generally known to the person skilled in the art.
- [237] Suitable expression vectors can be prokaryotic or eukaryotic expression vectors. Examples of prokaryotic expression vectors are, for expression in *E. coli*, e.g. the vectors pGEM or pUC derivatives, examples of eukaryotic expression vectors are for expression in *Saccharomyces cerevisiae*, e.g. the vectors p426Met25 or p426GAL1 (Mumberg et al., 1994, Nucl. Acids Res., 22, 5767-5768), for expression in insect cells, e.g. *Baculovirus* vectors such as disclosed in EP-B1-0 127 839, and for expression in mammalian cells, e.g. the vectors Rc/CMV and Rc/RSV or SV40 vectors, which are all generally obtainable. Specific vectors for production of RNA interference following transfection, such as the pSUPER vector (Brummelkamp et al., 2002, Science, 296:550-553) are also included.
- [238] In general, the expression vectors also contain promoters suitable for the respective cell, such as, for example, the trp promoter for expression in *E. coli* (see, for example, EP-B1-0 154 133), the MET 25, GAL 1 or ADH2 promoter for expression in yeast (Russel et al., 1983, J. Biol. Chem., 258, 2674-2682; Mumberg, supra), the *Baculovirus* polyhedrin promoter, for expression in insect cells (see, for example, EP-B1-0 127 839). For expression in mammalian cells, for example, suitable promoters are those which allow a constitutive, regulatable, tissue-specific, cell-cycle-specific or metabolically specific expression in eukaryotic cells. Regulatory elements according to the present invention preferably are promoters, activator sequences, enhancers, silencers and/or repressor sequences.
- [239] Examples of suitable regulatory elements which make possible constitutive expression in eukaryotes preferably are promoters which are recognized by the RNA polymerase III or viral promoters, CMV enhancer, CMV promoter, SV40 promoter or LTR promoters, e.g. from MMTV (mouse mammary tumor virus; Lee et al., 1981, Nature, 214, 228-232) and further viral promoter and activator sequences, derived

from, for example, adeno- and adeno-like viruses, HBV, HCV, HSV, HPV, EBV, HTLV or HIV.

- [240] Examples of regulatory elements which make possible regulated expression in eukaryotes are the tetracycline operator in combination with a corresponding repressor (Gossen et al., 1994, *Curr. Opin. Biotechnol.*, 5:516-20).
- [241] Translation initiation signals, translation termination signals, transcription termination signals, and polyadenylation signals are generally known to the person skilled in the art and can be readily obtained from commercial laboratory suppliers.
- [242] Preferably, the expression of the genes relevant for liver disorders and/or epithelial cancer takes place under the control of tissue-specific promoters, for example, under the control of liver-specific promoters such as albumin, alpha fetoprotein, apolipoprotein AI, alpha-1 antitrypsin, and the complement C5 and C8A genes (Schrem et al., 2002, *Pharmacol. Rev.*, 54 129-58; Pontoglio et al., 2001, *J. Expt. Med.*, 194:1683-1689). The regulatory sequences associated with genes highly deregulated in HCC as described herein also provide a preferable method for specific gene expression in these disorders.
- [243] Further examples of regulatory elements which make tissue-specific expression in eukaryotes possible are promoters or activator sequences from promoters or enhancers of those genes which code for proteins which are only expressed in certain cell types.
- [244] Examples of regulatory elements which make possible metabolically specific expression in eukaryotes are promoters which are regulated by hypoxia, by oxidative stress, by glucose deficiency, by phosphate concentration or by heat shock.
- [245] Examples of regulatory elements which make cell cycle-specific expression in eukaryotes possible are promoters of the following genes: cdc25A, cdc25B, cdc25C, cyclin A, cyclin E, cdc2, E2F-1 to E2F-5, B-myb or DHFR (Zwicker J. and Müller R., 1997, *Trends Genet.*, 13:3-6). The use of cell cycle regulated promoters is particularly preferred in cases, in which expression of the polypeptides or nucleic acids according to the invention is to be restricted to proliferating cells.
- [246] In order to make possible the introduction of nucleic acids as described above, or a nucleic acid which is a non-functional mutant variant of the nucleic acid and thus the expression of the polypeptide in a eukaryotic or prokaryotic cell by transfection, transformation or infection, the nucleic acid can be present as a plasmid, as part of a viral or non-viral vector. Suitable viral vectors here are particularly: baculoviruses, vaccinia viruses, adenoviruses, adeno-associated viruses, retroviruses and herpesviruses. Suitable non-viral vectors here are particularly: virosomes, liposomes, cationic lipids, or polylysine-conjugated DNA or naked DNA.
- [247] Plasmids, shuttle vectors, phagemids, and cosmids suitable for use according to the invention are also known to the person skilled in the art and are generally obtainable



from commercial laboratory suppliers.

- [248] Examples of vectors applicable in gene therapy are virus vectors, for example adenovirus vectors, retroviral vectors or vectors based on replicons of RNA viruses (Lindemann et al., 1997, Mol. Med. 3: 466-476; Springer et al., 1998, Mol. Cell. 2:549-558). Eukaryotic expression vectors are suitable in isolated form for gene therapy use, as naked DNA can penetrate, for example, into liver cells upon local application or via the blood supply.
- [249] Compared to the state of the art, this fusion construct surprisingly allows improved, more sensitive, earlier, faster, and/or non-invasive diagnosis and/or improved, sustained and/or more effective treatment of the liver disorders, and/or other epithelial cancers.
- [250] In another aspect the invention furthermore relates to a cell comprising a nucleic acid according to the invention and/or a variant thereof. Preferably the cell is transformed with a vector according to the invention. The cell preferably contains a nucleic acid wherein the nucleic acid is either a non-functional mutant variant of a nucleic acid according to the invention. In particular the cell contains a vector comprising a nucleic acid wherein the nucleic acid is a non-functional mutant variant of a nucleic acid according to the invention. Preferably the cell contains a nucleic acid having a sequence complementary to a nucleic acid according to the invention, or a variant thereof. Moreover the cell preferably contains a vector comprising a nucleic acid coding for an antibody according to the invention or a fragment of the antibody. The cell according to the invention may for example be a liver cell, comprising at least one of the aforementioned nucleic acids or a cell which is transformed using one of the above described vectors. Cells can be either prokaryotic or eukaryotic cells, heterologous or autologous cells. Examples of prokaryotic cells are *E. coli* and examples of eukaryotic cells include primary hepatocytes cells, hepatocytes cell lines such as HepG2 and Hep3B cells, yeast cells, for example *Saccharomyces cerevisiae* or insect cells.
- [251] Compared to the state of the art, the cell according to the invention surprisingly allows improved, more sensitive, earlier, faster, and/or non-invasive diagnosis and/or improved, sustained and/or more effective treatment of the liver disorders and/or other epithelial cancers.
- [252] In a preferred embodiment of the invention the cell is a transgenic embryonic non-human stem cell which comprises at least one nucleic acid according to the invention, at least one vector, at least one knock-out gene construct and/or at least one expression vector as described above.
- [253] Processes for the transformation of cells and/or stem cells are well known to a person skilled in the art and include, for example, electroporation or microinjection.

- [254] In another aspect the invention relates to the provision of a transgenic non-human mammal comprising a compound selected from the group consisting of a nucleic acid according to the invention and/or a variant thereof, a nucleic acid which is a non-functional mutant variant the nucleic acid, a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, one of the aforementioned nucleic acids in the form of a vector, of a knock-down or knock-out gene construct, and of an expression vector.
- [255] Transgenic animals in general show a tissue-specifically increased expression of the nucleic acids and/or polypeptides and can be used for the analysis of liver disorders and/or epithelial cancers, such as for example HCC, and for development and evaluation of therapeutic strategies for such disorders. Transgenic animals may further be employed in the production of polypeptides according to the invention. The polypeptide produced by the animal may for example be enriched in a body fluid of the animal. The polypeptides according to the invention may for example be isolatable from a body fluid such as the milk.
- [256] Compared to the state of the art, this transgenic non-human mammal surprisingly allows improved, more sensitive, earlier, faster, and/or non-invasive analysis and/or diagnosis of liver disorders and/or other epithelial cancers.
- [257] Processes for the preparation of transgenic animals, in particular of transgenic mice, are likewise known to the person skilled in the art from e.g., US 5,625,122; US 5,698,765; US 5,583,278 and US 5,750,825 and include transgenic animals which can be produced, for example, by means of direct injection of expression vectors according to the invention into embryos or spermatocytes or by injection of the expression vectors into the pronucleus of the fertilized ovum or by means of the transfection of expression vectors into embryonic stem cells or by nuclear transfer into appropriate recipient cells (Polites and Pinkert, DNA Microinjection and Transgenic Animal Production, page 15 to 68 in Pinkert, 1994, Transgenic animal technology: a laboratory handbook, Academic Press, London, UK; Houdebine, 1997, Harwood Academic Publishers, Amsterdam, The Netherlands; Doetschman, Gene Transfer in Embryonic Stem Cells, page 115 to 146 in Pinkert, 1994, supra; Wood, Retrovirus-Mediated Gene Transfer, page 147 to 176 in Pinkert, 1994, supra; Monastersky, Gene Transfer Technology; Alternative Techniques and Applications, page 177 to 220 in Pinkert, 1994, supra).
- [258] If the above described nucleic acids are integrated into so-called "targeting vectors" or "knock-out" gene constructs (Pinkert, 1994, supra), it is possible after transfection of embryonic stem cells and homologous recombination, for example, to generate knock-out mice which, in general, as heterozygous mice, show decreased expression of the nucleic acid, while homozygous mice no longer exhibit expression of the nucleic acid.

The animals thus produced can also be used for the analysis of liver disorders, such as for example HCC, and/or epithelial cancers.

- [259] Knock-out gene constructs are known to the person skilled in the art, for example, from the US patents 5,625,122; US 5,698,765; US 5,583,278 and US 5,750,825.
- [260] In a further aspect the invention relates to an antibody or a fragment, wherein the antibody or antibody fragment is directed against a polypeptide according to the invention, a functional variant thereof or against a nucleic acid coding for the polypeptide, or a variant thereof.
- [261] Compared to the state of the art, these antibody or a fragment thereof surprisingly allow improved, more sensitive, earlier, faster, and/or non-invasive diagnosis and/or improved, sustained and/or more effective treatment of the liver disorders and/or other epithelial cancers.
- [262] The term "antibody" or "antibody fragment" is understood according to the present invention as also meaning antibodies or antigen-binding parts thereof prepared by genetic engineering and optionally modified, such as, for example, chimeric antibodies, humanized antibodies, multifunctional antibodies, bi- or oligospecific antibodies, single-stranded antibodies, F(ab) or F(ab)<sub>2</sub> fragments (see, for example, EP-B1-0 368 684, US 4,816,567; WO 98/24884). The antibodies according to the invention can for example be used for diagnosis, prevention and/or treatment of disorders according to the invention such as liver disorders, for example HCC, and/or epithelial cancers.
- [263] The invention further relates to a method for producing an antibody or antibody fragment, preferably a polyclonal or monoclonal antibody, specific for the polypeptides or functional variants thereof encoded by the nucleic acids according to the invention, or variants thereof for example for the diagnosis and/or prevention and/or treatment of disorders according to the invention. The process is carried out according to methods generally known to the person skilled in the art by immunizing a mammal, for example a rabbit, with a nucleic acid according to the invention or their variants thereof, or with a polypeptide according to the invention or parts thereof or functional variants thereof, having at least 6 amino acid length, preferably having at least 8 amino acid length, in particular having at least 12 amino acid length, if appropriate in the presence of, for example, Freund's adjuvant and/or aluminum hydroxide gels (see, for example, Harlow and Lane, 1998, Using Antibodies: A Laboratory Manual, Cold Spring Harbor Press, New York, USA, Chapter 5, pp. 53-135). The polyclonal antibodies formed in the animal as a result of an immunological reaction can then be easily isolated from the blood according to generally known methods and purified, for example, by means of column chromatography. Monoclonal antibodies can be produced, for example, according to the known method

of Winter & Milstein (Winter and Milstein, 1991, *Nature*, 349:293-299).

- [264] The present invention further relates to an antibody or antibody fragments directed against a polypeptide described above and reacts specifically with the polypeptides described above, where the above-mentioned parts of the polypeptide are either immunogenic themselves or can be rendered immunogenic by coupling to suitable carriers, such as, for example, bovine serum albumin or keyhole limpet hemocyanin to increase in their immunogenicity. This antibody is either polyclonal or monoclonal; preferably it is a monoclonal antibody.
- [265] Still further, the present invention relates to the generation and/or production of an antibody or antibody fragment specific for the polypeptide according to the invention from a recombinant antibody expression library, such as for example described by Knappik et al. (2000, *J. Molec. Biol.*, 296:57-86).
- [266] In another embodiment of the invention, it is provided an array, wherein the array contains at least two compounds selected from the group consisting of a polypeptide according to the invention, a functional variant thereof, a nucleic acid encoding the polypeptide, a non-functional mutant variant nucleic acid and an antibody or an antibody fragment directed against the polypeptide. Alternatively, the array may contain at least one component according to the invention in combination with previously described components implicated in neoplastic or metabolic liver disorders or epithelial cancers.
- [267] Within the meaning of the invention the term "array" refers to a solid-phase or gel-like carrier upon which at least two compounds are attached or bound in one-, two- or three-dimensional arrangement. Such arrays are generally known to the person skilled in the art and are typically generated on glass microscope slides, specially coated glass slides such as polycation-, nitrocellulose- or biotin- coated slides, cover slips, and membranes such as for example membranes based on nitrocellulose or nylon.
- [268] The aforementioned arrays include bound polypeptides according to the invention or functional variants thereof or nucleic acids coding for the polypeptides, or variants thereof, fusion proteins according to the invention or antibodies or antibody fragments directed against polypeptides according to the invention or functional variants thereof or cells expressing polypeptides according to the invention or functional variants thereof or at least two cells expressing at least one nucleic acid according to the invention, or variants thereof. Nucleic acids coding for these, or variants thereof can also be part of an array. Such arrays can be employed for analysis and/or diagnosis of liver disorders, preferably of HCC, and/or epithelial cancer.
- [269] The invention further relates to a method of producing arrays according to the invention, wherein at least two compounds according to the invention are bound to a carrier material.

- [270] Methods of producing such arrays, for example based on solid-phase chemistry and photo-labile protective groups are generally known (US 5,744,305). Such arrays can also brought into contact with substances or a substance libraries and tested for interaction, for example for binding or change of conformation.
- [271] The invention further relates to a process for preparing an array immobilized on a support material for analysis and/or diagnosis of disorders according to the invention such as a liver disorder, preferably of HCC, in which at least two nucleic acids, at least two polypeptides or at least two antibodies or antibody fragments, and/or at least two cells, or at least one of the aforementioned components in combination with other components relevant to neoplastic and metabolic liver disorders or epithelial cancers, as described above, is used for preparation. The arrays produced by such process can be employed for the diagnosis of disorders according to the invention.
- [272] In another aspect the invention relates to a diagnostic comprising at least one compound selected from the group consisting of a polypeptide according to the SEQ ID 1 to SEQ ID 93 or functional variants thereof, a nucleic acid encoding one of the aforementioned polypeptides, a variant of one of the aforementioned nucleic acids, and an antibody or an antibody fragment directed against one of the aforementioned polypeptides, combined or together with suitable additives or auxiliaries.
- [273] In a preferred embodiment the invention relates to a diagnostic comprising a polypeptide according to the SEQ ID 1 or a functional variant thereof, a nucleic acid encoding the aforementioned polypeptide, a variant of the aforementioned nucleic acid, and an antibody or an antibody fragment directed against the aforementioned polypeptide, combined or together with suitable additives or auxiliaries.
- [274] In a further aspect the invention relates to a diagnostic comprising at least one compound selected from the group consisting of a nucleic acid according to the SEQ ID 94 to SEQ ID 186 or variants thereof, combined with suitable additives or auxiliaries.
- [275] In a preferred embodiment the invention relates to a diagnostic comprising a nucleic acid according to the SEQ ID 94 or a variant thereof, combined with suitable additives or auxiliaries
- [276] Compared to the state of the art, this diagnostic surprisingly allows improved, more sensitive, earlier, faster, and/or non-invasive diagnosis of liver disorders and/or other epithelial cancers.
- [277] Within the meaning of the invention "suitable additives" or "auxiliaries" are generally known to the person skilled in the art and comprise, for example, physiological saline solution, demineralized water, gelatin or glycerol-based protein stabilizing reagents. Alternatively, the nucleic acid or polypeptide according to the invention may be lyophilized for stabilization.

- [278] In another example a diagnostic kit based on the nucleic acid sequences according to the invention could be generated. Such a kit may be designed specifically to detect cells altered as a result of the described disorders resident in the circulatory system and thereby detectable in serum from test patients. Additional examples of diagnostic kits includes enzyme linked immunosorbent assays (ELISA), radioimmunoassays (RIA), and detection of an immune reaction or specific antibodies to the polypeptides according to the invention including detection of specific responding immune cells.
- [279] In a preferred embodiment the diagnostic according to the invention contains a probe, preferentially a DNA probe.
- [280] For example, it is possible according to the present invention to prepare a diagnostic based on the polymerase chain reaction (PCR). Under defined conditions, preferably using primers specific for a nucleic acid according to the invention as a DNA probe PCRs specific for the nucleic acid sequences of the invention will be utilized to monitor both the presence, and especially the amount, of specific nucleic acids according to the invention in a sample isolated from a patient obtained for diagnostic or therapeutic purposes. This opens up a further possibility of obtaining the described nucleic acids, for example by isolation from a suitable gene or cDNA library, for example from a liver disorder-specific or liver specific gene bank, with the aid of a suitable probe (see, for example, J. Sambrook et al., 1989, Molecular Cloning. A Laboratory Manual 2nd edn. Cold Spring Harbor Laboratory, Cold Spring Harbor, NY Chapter 8 pages 8.1 to 8.81, Chapter 9 pages 9.47 to 9.58 and Chapter 10 pages 10.1 to 10.67).
- [281] Suitable probes are, for example, DNA or RNA fragments having a length of about 50-1000 nucleotides, preferably having a length of about 10 to about 100 nucleotides, preferably about 100 to about 200 nucleotides, in particular having a length of about 200-500 nucleotides, whose sequence can be derived from the polypeptides according to SEQ ID 1 to SEQ ID 93, and functional variants thereof, and nucleic acids coding for the polypeptides, preferably according to SEQ ID 94 to SEQ ID 186, and variants thereof.
- [282] Alternatively, it is preferably possible with the aid of the derived nucleic acid sequences to synthesize oligonucleotides that are suitable as primers for a polymerase chain reaction. Using this, the nucleic acid described above or parts of this can be amplified and isolated from cDNA, for example HCC-specific cDNA. Suitable primers are, for example, DNA fragments having a length of about 10 to 100 nucleotides, preferably having a length of about 15 to 50 nucleotides, in particular having a length of 17 to 30 nucleotides, whose sequence can be derived from the polypeptides according to SEQ ID 1 to SEQ ID 93 from the nucleic acids according to SEQ ID 94 to SEQ ID 186. The design and synthesis of such primers is generally known to the

person skilled in the art. The primers may additionally contain restriction sites, e.g. suitable for integration of the amplified sequence into vectors, or other adapters or overhang sequences, e.g. having a marker molecule such as a fluorescent marker attached, generally known to the skilled worker.

- [283] In another aspect of the invention it is provided a method of diagnosis of a disorder according to the invention, wherein at least one compound selected from the group consisting of a polypeptide according to the sequence of SEQ ID 1 to SEQ ID 93, functional variants thereof, a nucleic acid encoding one of the aforementioned polypeptides, a variant of one of the aforementioned nucleic acids, and an antibody directed against one of the aforementioned polypeptides or antibody fragment thereof, is identified in the sample of a patient and compared with at least one compound of a reference library or of a reference sample.
- [284] In a preferred embodiment of the method the disorder of the liver is a disorder selected from the group consisting of cirrhosis, alcoholic liver disease, chronic hepatitis, Wilson's disease, haemochromatosis, hepatocellular carcinoma, benign liver neoplasms, and focal nodular hyperplasia.
- [285] In a preferred embodiment of the method the epithelial cancer is an adenocarcinoma of any organ other than liver, preferably of an organ selected from the group consisting of the lung, the stomach, the kidney, the colon, the prostate, the skin, and the breast.
- [286] Compared to the state of the art, this diagnostic surprisingly allows improved, more sensitive, earlier, faster, and/or non-invasive diagnosis of the liver disorders and/or other epithelial cancers.
- [287] Preferably the sample is isolated from a patient by non-invasive methods as described above.
- [288] For example, serum detection of specific deregulated gene proteins via ELISA assay is one application, alternatively one or a panel of antibodies to deregulated gene products may be used, from which a diagnostic score is deduced based on the combinations of, and the expression levels of gene products expressed in the diseased tissue or in serum from diseased individuals.
- [289] A preferred diagnostic according to the invention contains the described polypeptide or the immunogenic parts thereof described in greater detail above. The polypeptide or the parts thereof, which are preferably bound to a solid phase, e.g. of nitrocellulose or nylon, can be brought into contact *in vitro*, for example, with the body fluid to be investigated, e.g. blood, serum, plasma, ascitic fluid, pleural effusion, cerebral spinal fluid, saliva, urine, semen, in order thus to be able to react, for example, with autoimmune antibodies present in e.g. the blood of the patient. The antibody-peptide complex can then be detected, for example, with the aid of labeled antihuman IgG antibodies. The labeling involves, for example, an enzyme, such as peroxidase,

which catalyses a color or chemiluminescent reaction. The presence and the amount of autoimmune antibody present can thus be detected easily and rapidly by means of the color.

- [290] In addition the diagnostic may be directed to detecting an endogenous antibody or fragment thereof present in the sample isolated from a patient which antibody or fragment thereof is directed against a polypeptide according to the invention. Detection of such autoimmune antibodies may be accomplished by methods generally known to the skilled artisan, e.g. by immunoaffinity assays using polypeptides according to the invention or functional variants thereof or parts thereof as a probe. Preferably the presence of such autoimmune antibodies is indicative of the patient suffering from a disorder according to the invention.
- [291] A further diagnostic, that is subject matter of the present invention, contains the antibodies according to the invention themselves. With the aid of these antibodies, it is possible, for example, to easily and rapidly investigate a tissue sample as to whether the concerned polypeptide according to the invention is present in an increased amount in order to thereby obtain an indication of possible disease including liver disorders, for example HCC. In this case, the antibodies according to the invention are preferably labeled directly, or more commonly for example these are detected with a specific secondary antibody indirectly, such as with an enzyme or fluorescent molecule, as already described above. The specific antibody-peptide complex can thereby be detected easily, and rapidly, e.g., by means of an enzymatic color reaction.
- [292] In still another aspect of the invention it is provided a method for identifying at least one nucleic acid according to the SEQ ID 94 to SEQ ID 186, or a variant thereof differentially expressed in a sample isolated from a patient relative to a reference library or a reference sample comprising the following steps: (a) detecting the expression of at least one nucleic acid according to the SEQ ID 94 to SEQ ID 186, or a variant thereof in a sample isolated from a patient, (b) comparing the expression of said nucleic acid(s) detected in step (a) with the expression of the same nucleic acid(s) in a reference library or in a reference sample, (c) identifying said nucleic acid(s) which is (are) differentially expressed in the sample isolated from the patient compared to the reference library or the reference sample.
- [293] Compared to the state of the art the method surprisingly allows improved, more sensitive, earlier, faster, and/or non-invasive identification of differentially expressed nucleic acids according to the invention that provides a useful basis for diagnosing a disorder according to the invention.
- [294] Preferably at least 2, at least 3, at least 4 at least 5, at least 6, or at least 7 nucleic acids are identified.
- [295] In another preferred embodiment of the method said nucleic acid(s) is (are) detected



by PCR based detection or by a hybridization assay.

- [296] In another preferred embodiment of the method the expression of said nucleic acid is compared by a method selected from the group consisting of solid-phase based screening methods, hybridization, subtractive hybridization, differential display, and RNase protection assay.
- [297] In a further preferred embodiment of the method the sample isolated from the patient is selected from the group consisting of liver tissue, a liver cell, tissue from another organ subject to cancerous transformation, a cell from this organ, blood, serum, plasma, ascitic fluid, pleural effusion, cerebral spinal fluid, saliva, urine, semen, and feces.
- [298] Preferably the reference sample is isolated from a source selected from a non-diseased sample of the same patient or a non-diseased sample from another subject. The selection of appropriate reference samples is generally known to the person skilled in the art. In particular the reference sample may be selected from the group consisting of liver tissue, a liver cell, blood, serum, plasma, ascitic fluid, pleural effusion, cerebral spinal fluid, saliva, urine, semen, and feces.
- [299] In another preferred embodiment of the method, the reference library is an expression library or a data base comprising clones or data on non-diseased expression of at least one nucleic acid according to the invention in samples that preferably may be selected from the group consisting of liver tissue, a liver cell, blood, serum, plasma, ascitic fluid, pleural effusion, cerebral spinal fluid, saliva, urine, semen, and feces.
- [300] In another aspect of the invention it is provided a method of diagnosing a liver disorder, or an epithelial cancer comprising the following steps: (a) detecting the expression of at least one nucleic acid according to the SEQ ID 94 to SEQ ID 186, or a variant thereof in a sample isolated from a patient, (b) comparing the expression of said nucleic acid(s) detected in step (a) with the expression of the same nucleic acid(s) in a reference library or in a reference sample, (c) identifying said nucleic acid which is differentially expressed in the sample isolated from the patient compared to the reference library or the reference sample, and (d) matching said nucleic acid(s) identified in step (c) with said nucleic acid(s) differentially expressed in a pathologic reference sample or pathologic reference library, wherein the matched nucleic acid(s) is (are) indicative of the patient suffering from a liver disorder or an epithelial cancer.
- [301] Compared to the state of the art, this method of diagnosing surprisingly allows improved, more sensitive, earlier, faster, and/or non-invasive diagnosis of the liver disorders and/or other epithelial cancers.
- [302] In another preferred embodiment of the method of diagnosis, the pathologic reference sample is isolated from a diseased sample from another patient. The latter patient having been diagnosed as suffering from the disorder according to the invention

which is to be diagnosed. The selection of appropriate pathologic reference samples is generally known to the person skilled in the art. In particular the pathologic reference sample may be selected from the group consisting of liver tissue, a liver cell, blood, serum, plasma, ascitic fluid, pleural effusion, cerebral spinal fluid, saliva, urine, semen, and feces.

[303] In another preferred embodiment of the method of diagnosis, the pathologic reference library is a data base comprising data on differential expression of the at least one nucleic acid according to the invention in samples isolated from at least one patient, excluding the patient under diagnosis, suffering from the disorder according to the invention to be diagnosed in the inventive method relative to control expression in a reference sample or reference library. The pathologic reference library preferably also relates to a differential expression library comprising nucleic acids according to the invention which are differentially expressed in samples isolated from at least one patient, excluding the patient under diagnosis, suffering from the disorder according to the invention to be diagnosed in the inventive method relative to control expression in a reference sample or reference library. The selection of an appropriate pathologic reference library is generally known to the person skilled in the art.

[304] Preferably the liver disorder is a disorder selected from the group consisting of cirrhosis, alcoholic liver disease, chronic hepatitis, Wilson's Disease, haemochromatosis, hepatocellular carcinoma, benign liver neoplasms, and focal nodular hyperplasia. In particular the epithelial cancer is an adenocarcinoma of any organ other than liver, preferably of an organ selected from the group consisting of the lung, the stomach, the kidney, the colon, the prostate, the skin, and the breast.

[305] Within the meaning of the invention the term "detecting a nucleic acid" refers to a method that preferably uncovers, visualizes, separates or allows recognition of the nucleic acid according to the invention from the background of the other components present in the sample. Such methods are generally known to the person skilled in the art and include in situ hybridization, PCR amplification, gel electrophoresis, northern blots, solid phase array (gene chips) based methods, nuclease protection methods (as described and referenced in Alberts, et al. 2002, The Molecular Biology of the Cell, 4<sup>th</sup> ed. Garland, New York, USA).

[306] Within the meaning of the invention the term "comparing the expression of said nucleic acid(s) detected in step (a) with the expression of the same nucleic acid(s) in a reference library or in a reference sample" refers to a comparison of the expression of the two groups of said nucleic acid(s) on a quantitative or qualitative level by means of an experimental procedure such as differential display, subtractive hybridization, RNase protection assay, or especially DNA chip hybridization. Moreover a comparison of experimental data on said nucleic acid(s) detected in step (a) with the

expression of the same nucleic acid(s) in a reference library as defined above is also included herein.

- [307] The term "identifying said nucleic acid(s) which is (are) differentially expressed in the sample isolated from the patient compared to the reference library or the reference sample" within the meaning of the present invention is understood to mean selecting said nucleic acid(s) which is (are) differentially expressed compared to the reference library or the reference samples which fulfills the following criteria: the level of differential expression of the detected said nucleic acid(s) compared to the reference library or the reference samples is greater than about 2 fold, preferably greater than about 5 fold, more preferred greater than about 10 fold upregulated.
- [308] The term "matching said nucleic acid(s) identified in step (c) with said nucleic acid(s) differentially expressed in a pathologic reference sample or pathologic reference library " within the meaning of the invention is understood to mean that said nucleic acid(s) identified in step (c) is (are) compared with said nucleic acid(s) differentially expressed in a pathologic reference sample or pathologic reference library. Then said nucleic acid(s) identified in step (c) that is (are) also differentially expressed in the pathologic reference sample or pathologic reference library is (are) matched, i.e. said identical pair is identified and allocated. Since the differential expression of said nucleic acid(s) in the pathologic reference sample or pathologic reference library is (are) indicative of a disorder according to the invention, such correspondence with the differential expression in the sample then indicates that the patient suffers from that disorder.
- [309] Preferably the sample is isolated from a patient by non-invasive or preferably minimally invasive methods such as described above, including venupuncture.
- [310] The methods of diagnosing according to the invention allows early detection of a liver disorder and/or an epithelial cancer, and/or non-invasive diagnosis of the disorder, based on an essentially concordant expression pattern of the nucleic acids according to the invention detected in the samples isolated from an animal and/or a human patient suffering from a liver disorder and/or an epithelial cancer relative to a reference sample or relative to a reference library. The method has the additional advantage that it also provides additional and novel diagnostic parameters to characterize different subtypes of liver disorders, such as for example subtypes of HCC.
- [311] The term "essentially concordant expression pattern" of the nucleic acids according to the invention refers to a pattern of expression that is essentially reproducible from patient to patient or subject to subject, provided that the patients or subjects compared are in the same or comparable pathological condition or healthy condition, respectively.

- [312] In still another aspect of the invention it is provided a method for identifying at least one polypeptide according to the SEQ ID 1 to SEQ ID 93, or a functional variant thereof differentially expressed in a sample isolated from a patient relative to a reference library or a reference sample comprising the following steps: (a) detecting the expression of at least one polypeptide according to the SEQ ID 1 to SEQ ID 93, or a functional variant thereof in a sample isolated from a patient, (b) comparing the expression of said polypeptide(s) detected in step (a) with the expression of said polypeptide(s) in a reference library or in a reference sample, (c) identifying said polypeptide(s) which is (are) differentially expressed in the sample isolated from the patient compared to the reference library or the reference sample.
- [313] Compared to the state of the art, this method surprisingly allows improved, more sensitive, earlier, faster, and/or non-invasive identification of differentially expressed polypeptides according to the invention that provides a useful basis for diagnosing a disorder according to the invention.
- [314] Preferably at least 2, at least 3, at least 4, at least 5, at least 6, or at least 7 polypeptides are identified.
- [315] Preferably the sample is isolated from a patient by non-invasive or minimally invasive methods such as described above, including venupuncture.
- [316] In another embodiment of the method the sample is a sample as defined further above. Preferably the reference sample is a reference sample as defined above.
- [317] In another preferred embodiment of the method, the reference library is an expression library or a data base comprising clones or data on non-diseased expression of the at least one polypeptide according to the invention in samples that preferably may be selected from the group consisting of liver tissue, a liver cell, blood, serum, plasma, ascitic fluid, pleural effusion, cerebral spinal fluid, saliva, urine, semen, or feces. Such databases are generated as a result of the cDNA microarray expression analysis according to the invention and are known to persons skilled in the art. Further reference libraries useable according to the invention have been described above.
- [318] In another aspect of the invention it is provided a method of diagnosing a liver disorder or an epithelial cancer comprising the following steps: (a) detecting the expression of at least one polypeptide according to the SEQ ID 1 to SEQ ID 93, or a functional variant thereof in a sample isolated from a patient, (b) comparing the expression of said polypeptide(s) detected in step (a) with the expression of said polypeptide(s) in a reference library or in a reference sample, (c) identifying said polypeptide(s) which is (are) differentially expressed in the sample isolated from the patient compared to the reference library or the reference sample, and (d) matching said polypeptide(s) identified in step (c) with said polypeptide(s) differentially expressed in a pathologic reference sample or pathologic reference library, wherein the

matched polypeptide(s) is (are) indicative of the patient suffering from a liver disorder or an epithelial cancer.

[319] Compared to the state of the art, this method of diagnosing surprisingly allows improved, more sensitive, earlier, faster, and/or non-invasive diagnosis of the liver disorders and/or other epithelial cancers.

[320] Preferably at least 2, at least 3, at least 4, at least 5, at least 6, or at least 7 polypeptides are identified.

[321] Within the meaning of the invention the term "detecting a polypeptide" refers to a method that preferably uncovers, visualizes, separates and/or allows recognition of the polypeptide according to the invention from the background of the other components present in the sample. Such methods are generally known to the person skilled in the art and includes gel electrophoresis, chromatographic techniques, immunoblot analysis, immunohistochemistry, enzyme based immunoassay, mass spectroscopy, high pressure liquid chromatography, surface plasmon resonance, and/or antibody and protein arrays as described above (Ausubel, F.A. et al., eds., 1990, Current Protocols in Molecular Biology. Greene Publishing and Wiley-Interscience, New York, USA, Chapter 10; Myszka and Rich 2000, Pharm. Sci. Technol. Today 3:310-317). Preferably proteins and polypeptides are prepared from the sample by disruption of the cells with physical sheering or ultrasonic means, for example. Protein is denatured and stabilized with reducing agent treatment and heating and the protein is size fractionated on electrophoretic polyacrylamide gels.

[322] Within the meaning of the invention the term "comparing the expression of said polypeptide(s) detected in step (a) with the expression of the same polypeptide(s) in a reference library or in a reference sample " refers to a comparison of the expression of the two groups of polypeptide(s) on a quantitative and/or qualitative level by means of an experimental procedure such as two dimensional gel electrophoresis, chromatographic separation techniques, immunoblot analysis, surface plasmon resonance, immunohistochemistry, and enzyme based immunoassay. In two dimensional gel electrophoresis, all peptides are first resolved according to isoelectric point in the first electrophoretic dimension and then by size according to methods well known to persons experienced in the art. Moreover a comparison of experimental data on the at least one polypeptide detected in step 1 with the expression of the polypeptide in a reference library as defined above is also included herein.

[323] The term "Identifying said polypeptide(s) which is (are) differentially expressed in the sample isolated from the patient compared to the reference library or the reference sample" within the meaning of the present invention is understood to mean selecting said polypeptide(s) which is (are) differentially expressed compared to the reference library or the reference samples which fulfills the following criteria: the level of dif-

ferential expression of the detected polypeptide(s) compared to the reference library or the reference samples is greater than about 2 fold, preferably greater than about 5 fold, more preferred greater than about 10 fold upregulated.

[324] The term "matching said polypeptide(s) identified in step (c) with said polypeptide(s) differentially expressed in a pathologic reference sample or pathologic reference library " within the meaning of the invention is understood to mean that said polypeptide(s) identified in step (c) is compared with said polypeptide(s) differentially expressed in a pathologic reference sample or pathologic reference library. Then said polypeptide(s) identified in step (c) that is (are) also differentially expressed in the pathologic reference sample or pathologic reference library is (are) matched, i.e. said identical pair(s) is (are) identified and allocated. Since the differential expression of said polypeptide(s) in the pathologic reference sample or pathologic reference library is (are) indicative of a disorder according to the invention, such correspondence with the differential expression in the sample then indicates that the patient suffers from that disorder.

[325] Preferably the sample is isolated from a patient by non-invasive or minimally invasive methods such as described above, including venupuncture.

[326] In another embodiment of the method the sample is a sample as defined further above. Preferably the reference sample is a reference sample as defined above.

[327] In another preferred embodiment of the method of diagnosis, the reference library is an expression library or a dataset comprising clones or data on non-diseased expression of the at least one polypeptide according to the invention in samples that preferably may be selected from the group consisting of liver tissue, a liver cell, blood, serum, plasma, ascitic fluid, pleural effusion, cerebral spinal fluid, saliva, urine, semen, and feces.

[328] An example of a data base according to the invention and further experimental reference libraries useable according to the invention have been described above.

[329] In another preferred embodiment of the method of diagnosis, the pathologic reference sample is a pathologic reference sample as has been defined above.

[330] In another preferred embodiment of the method of diagnosis, the pathologic reference library is a data base comprising data on differential expression of said polypeptide(s) according to the invention in samples isolated from at least one patient, excluding the patient under diagnosis, suffering from the disorder according to the invention to be diagnosed in the inventive method relative to control expression in a reference sample or reference library. The pathologic reference library also relates to a differential expression library comprising polypeptides according to the invention which are differentially expressed in samples isolated from at least one patient, excluding the patient under diagnosis, suffering from the disorder according to the

invention to be diagnosed in the inventive method relative to control expression in a reference sample or reference library. The selection of an appropriate pathologic reference library is generally known to the person skilled in the art.

- [331] Preferably the liver disorder is a disorder selected from the group consisting of cirrhosis, alcoholic liver disease, chronic hepatitis, Wilson's Disease, haemochromatosis, hepatocellular carcinoma, benign liver neoplasms, and focal nodular hyperplasia. In particular the epithelial cancer is an adenocarcinoma of any organ other than liver, preferably of an organ selected from the group consisting of the lung, the stomach, the kidney, the colon, the prostate, the skin, and the breast.
- [332] The methods of diagnosing according to the invention allows early detection of a liver disorder and/or epithelial cancer, and/or non-invasive diagnosis of the disorder, based on an essentially concordant expression pattern of the polypeptides according to the invention detected in the samples isolated from an animal and/or a human patient suffering from a liver disorder and/or epithelial cancer relative to a reference sample or relative to a reference library. The method has the additional advantage that it also provides additional and novel diagnostic parameters to characterize different subtypes of liver disorders, such as for example subtypes of HCC.
- [333] The term "essentially concordant expression pattern" of the polypeptides according to the invention refers to a pattern of expression that is essentially reproducible from patient to patient or subject to subject, provided that the patients or subjects compared are in the same or comparable pathological condition or healthy condition, respectively.
- [334] In another aspect of the invention it is provided a pharmaceutical composition comprising at least one compound selected from the group consisting of a polypeptide according to SEQ ID 1 to 93, a functional variant thereof, a nucleic acid encoding one of the aforementioned polypeptides, a variant of one of the aforementioned nucleic acids, a nucleic acid which is a non-functional mutant variant of one of the aforementioned nucleic acids, a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, a vector comprising one of the aforementioned nucleic acids, a cell comprising one of the aforementioned nucleic acids, a cell comprising the aforementioned vector, an antibody or a fragment of the antibody directed against one of the aforementioned polypeptides, a vector comprising a nucleic acid coding for the aforementioned antibody, a cell comprising the vector comprising a nucleic acid coding for the aforementioned antibody, and a cell comprising the vector comprising a nucleic acid coding for the aforementioned antibody fragment, combined or together with suitable additives or auxiliaries. In a preferred embodiment the pharmaceutical composition contains at least one cell according to the invention, combined or mixed together with suitable additives or auxiliaries.

- [335] When compared to the state of the art of therapy of liver disorders, and/or other epithelial cancers the pharmaceutical composition according to the invention surprisingly provide an improved, sustained and/or more effective treatment.
- [336] A pharmaceutical composition in the sense of the invention encompasses medicaments which can be used for preventing and/or treating liver disorders and/or epithelial cancer. The pharmaceutical composition includes, for instance, a stabilized recombinant antibody that has been produced by expression of specific antibody gene fragments in a cellular system, preferably a eukaryotic system. A recombinant antibody therapeutic for instance, is delivered by injection into the diseased liver region or into the venous or arterial vascular systems or into the hepatic portal system. The injections can be repeated at regular intervals to achieve therapeutic efficacy. Therapeutics according to this invention may also be employed in combinations with other chemical, antibody, or any other therapeutic application to improve efficacy.
- [337] An antibody or other specific-binding partner can be conjugated to a second molecule, such as a cytotoxic agent, and used for targeting the second molecule to a tissue-antigen positive cell (Viteta E.S. et al, 1993, Immunotoxin therapy, in DeVita Jr. V.T. et al., eds, Cancer: Principles and Practice of Oncology, 4<sup>th</sup> ed., J.B. Lippincott Co., Philadelphia, 2624-2636). Examples of cytotoxic agents include, but are not limited to, antimetabolites, alkylating agents, anthracyclines, antibiotics, anti-mitotic agents, radioisotopes and chemotherapeutic agents. Techniques for conjugating ..., therapeutic agents to antibodies are well known in prior art. ...
- [338] In addition to immunotherapy, polynucleotides and polypeptides can be used as targets for non-immunotherapeutic applications, e.g. using compounds which interfere with function, expression, assembly of the genes according to the invention, including but not limited to modulation(s) of the enzymatic active site(s) of the polypeptide(s), change of the protein(s) structure(s), interaction(s) via small molecules, etc.
- [339] The present invention also relates to a process producing a pharmaceutical composition for the treatment and/or prevention of disorders according to the invention, for example, HCC, in which at least one component selected from the group consisting of a polypeptide according to the invention, a functional variant thereof, a nucleic acid encoding one of the aforementioned polypeptides, a variant of one of the aforementioned nucleic acids, a nucleic acid which is a non-functional mutant variant of one of the aforementioned nucleic acids, a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, a vector comprising one of the aforementioned nucleic acids, a cell comprising one of the aforementioned nucleic acids, a cell comprising the aforementioned vector, an antibody or a fragment of the antibody directed against one of the aforementioned polypeptides, a vector comprising a nucleic acid coding for one of the aforementioned antibodies, a cell comprising the



vector comprising a nucleic acid coding for one of the aforementioned antibodies, and a cell comprising the vector comprising a nucleic acid coding for one of the aforementioned antibody fragments, is combined or mixed together with suitable additives.

[340] The present invention furthermore relates to a pharmaceutical composition produced by this process for the treatment and/or prevention of liver disorders and/or epithelial cancers, for example, HCC, which contains at least one component selected from the group consisting of a polypeptide according to the invention, a functional variant thereof, a nucleic acid encoding one of the aforementioned polypeptides, a variant of one of the aforementioned nucleic acids, a nucleic acid which is a non-functional mutant variant of one of the aforementioned nucleic acids, a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, a vector comprising one of the aforementioned nucleic acids, a cell comprising one of the aforementioned nucleic acids, a cell comprising the aforementioned vector, an antibody or a fragment of the antibody directed against one of the aforementioned polypeptides, a vector comprising a nucleic acid coding for one of the aforementioned antibodies, a cell comprising the vector comprising a nucleic acid coding for one of the aforementioned antibodies, and a cell comprising the vector comprising a nucleic acid coding for one of the aforementioned antibody fragments, if appropriate together with suitable additives and auxiliaries.

[341] The invention furthermore relates to the use of this pharmaceutical composition for the prevention and/or treatment of liver disorders, for example, HCC and/or epithelial cancer.

[342] Preferably the pharmaceutical composition is employed for the treatment of a liver disorder selected from the group consisting of cirrhosis, alcoholic liver disease, chronic hepatitis, Wilson's Disease, haemochromatosis, hepatocellular carcinoma, benign liver neoplasms, and focal nodular hyperplasia. In particular the pharmaceutical composition is employed for the treatment of an epithelial cancer that is an adenocarcinoma of any organ other than liver, preferably of an organ selected from the group consisting of the lung, the stomach, the kidney, the colon, the prostate, the skin, and the breast.

[343] Therapy can also be carried out in a conventional manner generally known to the person skilled in the art, e.g. by means of oral application or via intravenous injection of the pharmaceutical compositions according to the invention. It is thus possible to administer the pharmaceutical composition comprising the suitable additives or auxiliaries, such as, for example, physiological saline solution, demineralized water, stabilizers, proteinase inhibitors.

[344] A therapy based on the use of cells, which express at least one polypeptide according to the invention, functional variants thereof or nucleic acids coding for the

polypeptide, or variants thereof can be achieved by using autologous or heterologous cells. Preferred cells comprise liver cells, for example primary cultures of liver cells, liver populating stem or progenitor cells, or blood cells. The cells can be applied to the tissue, preferably to the blood or injected into the liver, with suitable carrier material. Such therapy is preferably based on the notion that upon expression and/or release of a polypeptide according to the invention the polypeptide stimulates an immune response in the patient in need of the treatment.

[345] Preferably the therapeutical approach is directed toward inhibiting the function and/or expression of at least one polypeptide according to the invention and/or the function and/or expression of at least one nucleic acid according to the invention. Such inhibition of the expression and/or function preferably reduces the expression and/or function of the targeted nucleic acid/polypeptide significantly, for example by 50%, in particular by 80% and most preferably by 95%. The inhibition of the expression and/or function preferably abolishes the expression and/or functioning of the targeted nucleic acid/polypeptide. The inhibition can occur at any level, including transcription, translation, and/or perdurance of the nucleic acid (e.g. degradation, stability) in the cell. For inhibiting the biological activity of polypeptides according to the invention e.g. antibodies and small molecules can be targeted to cell-surface, exposed, extracellular, ligand binding, functional, etc. domains of the polypeptide. The term "antagonist/inhibitor" in the sense of the present invention can be directed to, or targeted to any part of the nucleotide and polypeptide according to the invention.

[346] Such reduction or abolished expression and/or functioning of the targeted nucleic acid/polypeptide can be determined using conventional assays for determining the expression and/or functioning of a nucleic acid/polypeptide generally known to the person skilled in the art. In particular such assays for determining the function comprise methods for comparing the biological activity of the targeted nucleic acid/polypeptide before and after administration of the pharmaceutical composition. Preferably such assays for determining the expression comprise methods for comparing the level of expression of the targeted nucleic acid/polypeptide before and after administration of the pharmaceutical composition.

[347] Such therapy is preferably accomplished by the use of a nucleic acid having a sequence complementary to one of nucleic acids according to the invention, i.e. an antisense molecule or a RNA interference molecule which reduces or abolishes the translation of transcribed nucleic acids according to the invention and thereby inhibits the function and/or expression of the targeted nucleic acid/polypeptide.

[348] In a preferred embodiment, the pharmaceutical composition comprises a nucleic acid having a complementary sequence which is an antisense molecule or an RNA interference molecule.

- [349] Preferably such nucleic acid having a complementary sequence may be employed in the form of a vector or a cell comprising such nucleic acid. On the polypeptide level the therapy may in particular be carried out by the use of an antibody or an antibody fragment directed against a polypeptide according to the invention. The antibody or antibody fragment may be administered directly to the patient or preferably the nucleic acid encoding the antibody is contained in a vector which is preferably contained in a cell. The cell or vector may then be administered to the patient in need of such treatment.
- [350] When compared to the state of the art of therapy of liver disorders, and/or other epithelial cancers the method of treating according to the invention surprisingly provide an improved, sustained and/or more effective treatment.
- [351] The invention further relates to a method of treating a patient suffering from of a liver disorder, wherein at least one component selected from the group consisting of a polypeptide according to the invention, a functional variant thereof, a nucleic acid encoding the polypeptide, a variant of one of the aforementioned nucleic acids, a nucleic acid which is a non-functional mutant variant of one of the aforementioned nucleic acids, a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, a vector comprising one of the aforementioned nucleic acids, a cell comprising one of the aforementioned nucleic acids, a cell comprising the vector, an antibody directed against the polypeptide, a fragment of the antibody, a vector comprising a nucleic acid coding for the antibody, a cell comprising the vector comprising a nucleic acid coding for the antibody, and a cell comprising the vector comprising a nucleic acid coding for the antibody fragment, optionally combined or together with suitable additives and/or auxiliaries, is administered to the patient in need of a treatment in a therapeutically effective amount.
- [352] Preferably the method of treatment is directed to a liver disorder selected from the group consisting of cirrhosis, alcoholic liver disease, chronic hepatitis, Wilson's disease, haemochromatosis, hepatocellular carcinoma, benign liver neoplasms, and focal nodular hyperplasia. In particular the method of treatment is directed to an epithelial cancer that is an adenocarcinoma of any organ other than liver, preferably of an organ selected from the group consisting of the lung, the stomach, the kidney, the colon, the prostate, the skin, and the breast.
- [353] Methods of administering such compounds or cells have been described in detail above.
- [354] The term "therapeutically effective amount" refers to the administration of an amount of the compound to the patient that results in an "effective treatment" as defined above. Determination of the therapeutically effective amount of the compound(s) is generally known to the person skilled in the art.

- [355] Such methods of treating allow effective treatment of a liver disorder and/or epithelial cancers as described above.
- [356] In another aspect of the invention it is provided a method of stimulating an immune response in a patient suffering from a liver disorder and/or an epithelial cancer to a polypeptide according to the invention, or a functional variant thereof, wherein at least one component selected from the group consisting of a polypeptide according to the invention, a functional variant thereof, a nucleic acid encoding one of the aforementioned polypeptides, a variant of one of the aforementioned nucleic acids, a vector comprising one of the aforementioned nucleic acids, a cell comprising one of the aforementioned nucleic acids, and a cell comprising the aforementioned vector, is administered to the patient in need of such treatment in an amount effective to stimulate the immune response in the patient.
- [357] When compared to the state of the art of therapy of liver disorders and/or other epithelial cancers, the method of stimulating an immune response according to the invention surprisingly provides an improved, sustained and/or more effective immunization.
- [358] In another aspect of the invention it is provided a method of preventing a patient from developing a liver disorder and/or an epithelial cancer, wherein at least one component selected from the group consisting of a polypeptide according to the invention, a functional variant thereof, a nucleic acid encoding one of the aforementioned polypeptides, a variant of one of the aforementioned nucleic acids, a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, a nucleic acid which is a non-functional mutant variant of one of the aforementioned nucleic acids, a vector comprising one of the aforementioned nucleic acids, a cell comprising one of the aforementioned nucleic acids, and a cell comprising the aforementioned vector, is administered to the patient in need of such preventive treatment in a therapeutically effective amount.
- [359] When compared to the state of the art of therapy of liver disorders, and/or other epithelial cancers the method of preventing according to the invention surprisingly provides an improved, sustained and/or more effective preventive measure.
- [360] Preferably the method of preventing and/or method of stimulating an immune response is directed to a liver disorder selected from the group consisting of cirrhosis, alcoholic liver disease, chronic hepatitis, Wilson's Disease, haemochromatosis, hepatocellular carcinoma, benign liver neoplasms, and focal nodular hyperplasia. In particular, preferably the method of preventing and/or method of stimulating an immune response is directed to an epithelial cancer which is an adenocarcinoma of any organ other than liver, preferably of an organ selected from the group consisting of the lung, the stomach, the kidney, the colon, the prostate, the skin, and the breast.

- [361] In another aspect of the invention it is provided a method of identifying a pharmacologically active compound comprising the following steps (a) providing at least one nucleotide according to the SEQ ID 94 to SEQ ID 186, or a variant thereof, (b) contacting said nucleotide(s) with suspected to be pharmacologically active compound(s), (c) assaying the interaction of said nucleotide(s) of step (a) with said compound(s) suspected to be pharmacologically active, (d) identifying said compound(s) suspected to be pharmacologically active which directly or indirectly interact with said nucleotide(s) of step (a).
- [362] In a further aspect the invention relates to a method of identifying at least one pharmacologically active compound comprising the following steps: (a) providing at least one polypeptide according to the SEQ ID 1 to SEQ ID 93, or a functional variant thereof, (b) contacting said polypeptide(s), with suspected to be pharmacologically active compound(s), (c) assaying the interaction of said polypeptide(s) of step (a) with said compound(s) suspected to be pharmacologically active, (d) identifying said compound (s) suspected to be pharmacologically active which directly or indirectly interact with said polypeptide(s) of step (a).
- [363] Preferably said nucleotide(s) or said polypeptide(s) is (are) provided in a form selected from the group of said nucleotide(s) or said polypeptide(s) is (are) attached to a column, said nucleotide(s) or said polypeptide(s) is (are) attached to an array, said nucleotide(s) or said polypeptide(s) is (are) contained in an electrophoresis gel, said nucleotide(s) or said polypeptide(s) is (are) attached to a membrane, and said nucleotide(s) or said polypeptide(s) is (are) expressed by a cell.
- [364] It is preferred but not intended to be limited to assay the interaction by a method selected from the group of enzyme and fluorescence based cellular reporter assays in which interaction of the compound suspected to be pharmacological active with a recombinant fusion protein including said polypeptide(s) of step (a) is detected. The interaction may preferably also be assayed by displacement of specific nucleic acid binding aptamer molecule(s) on the recombinant fusion protein, surface plasmon resonance, HPLC and mass spectroscopy.
- [365] Preferably the direct or indirect interaction is selected from the group consisting of induction of the expression of said nucleotide(s) or said polypeptide(s), inhibition of the expression of said nucleotide(s) or said polypeptide(s), activation of the function of said nucleotide(s) or said polypeptide(s), inhibition of the function of said nucleotide(s) or said polypeptide(s).
- [366] In a preferred embodiment a method for identifying an antagonist/inhibitor against the nucleotide according to the SEQ ID 94 to SEQ ID 186, or a variant thereof, comprising (a) contacting at least one nucleotide according to the SEQ ID 94 to SEQ ID 186 with a putative antagonist/inhibitor, and (b) determining whether the putative

antagonist/ inhibitor prevents the activity of the nucleotide.

- [367] In a further aspect of the invention, a method for identifying a putative antagonist/ inhibitor against the polypeptide according to the SEQ ID 1 to SEQ ID 93, or a functional variant thereof, comprising (a) contacting at least one polypeptide according to the SEQ ID 1 to SEQ ID 93 with the putative antagonist/inhibitor, and (b) determining whether the putative antagonist/ inhibitor prevents the activity of the polypeptide.
- [368] The term "pharmacologically active substance" in the sense of the present invention is understood as meaning all those molecules, compounds and/or compositions and substance mixtures which can interact under suitable conditions with a nucleotide according to the SEQ ID 94 to 186 or variants thereof, if appropriate together with suitable additives and/or auxiliaries.
- [369] The term "pharmacologically active substance" in the sense of the present invention is also understood as meaning all those molecules, compounds and/or compositions and substance mixtures which can interact under suitable conditions with polypeptide according to the SEQ ID 1 to 93 or functional variants thereof, if appropriate together with suitable additives and/or auxiliaries.
- [370] Possible pharmacologically active substances are simple chemical (organic or inorganic) molecules or compounds, but can also include peptides, proteins or complexes thereof. Examples of pharmacologically active substances are organic molecules that are derived from libraries of compounds that have been analyzed for their pharmacological activity. On account of their interaction, the pharmacologically active substances can influence the expression and/or function(s) of the nucleotide or polypeptide *in vivo* or *in vitro* or alternatively only bind to the nucleotides or polypeptides described above or enter into other interactions of covalent or non-covalent manner with them.
- [371] A suitable test system, for example, that can be used in accordance with the invention is based on identifying interactions with the two hybrid system (Fields and Sternglanz, 1994, Trends in Genetics, 10, 286-292; Colas and Brent, 1998 TIBTECH, 16, 355-363). In this test system, cells are transformed with expression vectors that express fusion proteins that consist of at least one polypeptide according to the invention and a DNA-binding domain of a transcription factor such as Gal4 or LexA. The transformed cells also contain a reporter gene whose promoter contains binding sites for the corresponding DNA-binding domain. By means of transforming a further expression vector, which expresses a second fusion protein consisting of a known or unknown polypeptide and an activation domain, for example from Gal4 or herpes simplex virus VP16, the expression of the reporter gene can be greatly increased if the second fusion protein interacts with the investigated polypeptide according to the

invention. This increase in expression can be used for identifying new interacting partners, for example by preparing a cDNA library from e.g., liver tissue, or diseased liver tissue for the purpose of constructing the second fusion protein. In a preferred embodiment, the interaction partner is an inhibitor of at least one of the polypeptides according to the SEQ ID 1 to 93 (encoded by the SEQ ID 94 to 186) or functional variants thereof. This test system can also be used for screening substances that inhibit an interaction between the polypeptide according to the invention and an interacting partner. Such substances decrease the expression of the reporter gene in cells that are expressing fusion proteins of the polypeptide according to the invention and the interacting partner (Vidal and Endoh, 1999, Trends in Biotechnology, 17: 374-81). In this way, it is possible to rapidly identify novel active compounds that can be employed for the therapy of and/or prevention of liver disorders and/or epithelial cancer.

[372] Assays for identifying pharmacologically active substances that exert an influence on the expression of proteins are well known to the skilled person (see, for example, Sivaraja et al., 2001, US 6,183,956). Thus, cells that express a polypeptide according to the SEQ ID 1 for example, or functional variants thereof can be cultured as a test system for analyzing gene expression *in vitro*, with preference being given to liver cells. Gene expression is analyzed, for example, at the level of the mRNA or of the proteins using methods generally known to the person skilled in the art. In this connection, the quantity of a polypeptide according to the SEQ ID 1 to 93 (encoded by the SEQ ID 94 to 186) or mRNA present after adding one or more putative pharmacologically active substances to the cell culture is measured and compared with the corresponding quantity in a control culture. This is done, for example, with the aid of an antibody specifically directed against the polypeptide according to the SEQ ID 1 to 93 (encoded by the SEQ ID 94 to 186), or a functional variant thereof, which can be used to detect the polypeptide present in the lysate of the cells. The amount of expressed polypeptide can be quantified by methods generally known to the person skilled in the art using, for example, an ELISA or a Western blot. In this connection, it is possible to carry out the analysis as a high-throughput method and to analyze a very large number of substances for their suitability as modulators of the expression of at least one of the polypeptides according to the SEQ ID 1 to 93 (encoded by the SEQ ID 13 to 24) (Sivaraja et al., 2001, US 6,183,956). In this connection, the substances to be analyzed can be taken from substance libraries (see, e.g. DE19816414) that can contain many thousands of substances, which are frequently very heterogeneous.

[373] The invention will now be further illustrated below with the aid of the figures and examples, representing preferred embodiments and features of the invention without the invention being restricted hereto.

[374]

[375] **Figure 1 to 8 RNA expression levels in hepatocellular carcinoma (HCC) samples**

[376] Summary boxplot of expression values in HCC versus non-diseased liver cDNA microarray experiments is provided. The box plot is a graphical representation of  $\log_2$  expression value ratios with the median value indicated by a horizontal line in each box. The extent of each box indicates the iqr = interquartile range (+/- 25<sup>th</sup> percentile of median value); whiskers indicate of 1.5 times the iqr. Ratios that do not fall within this range are indicated with small circles. For each nucleic acid according to the invention (SEQ ID 95 to 186) elevated expression is apparent in HCC in comparison to non-diseased liver samples. For gene abbreviations see Tables 2A to 2D (\*\*) c-syn represents three alternative nucleotide transcripts with corresponding three protein products.

[377]

[378] **Figure 9 to 99: RNA expression levels in various diseased liver samples and normal tissue(s)**

[379] Summary boxplots of expression values (SEQ ID 94 to 186) in Hepatocellular Carcinoma (HCC), Focal Nodular Hyperplasia (FNH) and Cirrhosis samples (Cirrh.) versus non-neoplastic liver cDNA microarray experiments are provided. The box plot analogs are used as described in Figure 1. For each nucleic acid according to the invention, elevated expression is apparent in HCCs and most of the FNHs samples. Legend: A= HCC; B= FNH; C= Cirrh. For gene abbreviations see Table 2A to 2D (\*\*) c-syn represents three alternative nucleotide transcripts with corresponding three protein products.

[380]

[381] **Figure 100 to 104 : Verification of differential gene expression when compared to normal tissue(s) and other types of cancer**

[382] The Assay-On-Demand (Applied Biosystems, USA) quantitative PCR (Q-PCR) method is utilized for verification of disease deregulated expression of nucleic acids PACE4; BIGH3; s.t.OCLA; SDCCAG28; Rab2; TM4SF4; DAD-1. In Figures 100 to 103, for example, the following commercially available Assay-On-Demand primers are employed: Hs00159844\_m1 for PACE4 (SEQ ID 98); Hs00154671\_m1 for BIGH3 (SEQ ID 99); Hs00215197\_m1 for s.t.OCLA (SEQ ID 101); Hs00246405\_m1 for SDCCAG28 (SEQ ID 102); Hs00234094\_m1 for Rab2 target (SEQ ID 106), Hs00270335\_m1 for TM4SF4 (SEQ ID 112); Hs00154671\_m1 for DAD-1 (SEQ ID 140). In another example (Figure 104), the AKR1C1 PCR product is monitored accordingly by incorporation of fluorescent double-stranded DNA intercalating molecules such as SYBR green. The increased expression of AKR1C1 (SEQ ID 96) in



HCC when compared to normal liver (NNL) is verified by using the SEQ ID 199 and SEQ ID 200 primers; data for B and C are not available. Overall, Mann-Whitney-U Test (non-parametric test applied for non-normally distributed data) is performed as Wilcoxon Rank Sum Test (Hollander & Wolfe, 1973, Nonparametric statistical inference. New York: John Wiley & Sons, pgs. 27-33, 68-75; Bauer, D.F., 1972, J. Amer. Statistical Assoc. 67, pgs 687-690). The expression values typically do not fit to a normal distribution so averaging the values may be misleading. However, analysis of the median values demonstrates significant differences in most of the cases between experimental and reference values, particularly in the large data sets.

[383] Legend: A= Hepatocellular Carcinoma (HCC); B= Focal Nodular Hyperplasia (FNH); C= Cirrhosis (Cirrh.); D= Non-Neoplastic liver (NNL). For gene abbreviations see Table 2A to 2D.

[384] **Figure 105: SDCCAG28 protein expression in tissues**

[385] Protein extracts are subjected to immunoblot analysis with HuCAL™ antibodies (Morphosys AG, Germany) specific to recombinant SDCCAG28 protein (e.g., MOR3491 anti ORI010), in order to determine the level of expression of the protein in human tissues [a= ORI010 (human SDCCAG28 recombinant protein); b= Hepatocellular Carcinoma (HCC); c= Normal Liver (NL); d= hepatoma HepG2 cell line. Annotated 33kDa position reflects a size of the predicted SDCCAG28 protein. Following incubation with an anti-HIS mouse antibody to specifically detect the HuCAL™ antibody and a horse-radish peroxidase (HRP) conjugated anti-mouse antibody the immune complexes are detected with a chemiluminescent HRP substrate. It is evident that the native SDCCAG28 protein migrates slightly faster than the recombinant SDCCAG28 protein (approximately 44 kDa band in lane a compared with 40.5 kDa bands prominent in lanes b and d). The intensities of the SDCCAG28 protein band are clearly stronger in the HCC tissue and in the HepG2 hepatoma cell line lysate (lanes b and d, respectively) than in the normal liver tissue (lane c). These analyses indicate that SDCCAG28 protein, the functional product of the SDCCAG28 mRNA specifically upregulated in HCC, is also highly overexpressed in HCC when compared to NNL.

[386]

[387] **Figure 106 to 107: Expression of HCC deregulated genes correlates with proliferation of hepatoma cells**

[388] Proliferation-dependent expression of target gene sequences according to the invention in hepatoma cells Hep3B (Figure 106) and HepG2 (Figure 107) following serum stimulation for 8 hours (black columns) and for 12 hours (white columns) of quiescent cells. The log<sub>2</sub>-transformed ratios of serum-stimulated vs. quiescent expression values from cDNA microarray experiment readout are provided. The

substantial increase in the level of expression of these sequences (for example, (ZNF216) SEQ ID 95; (AKR1C1) SEQ ID 96; (PACE4) SEQ ID 98; (SDCCAG28) SEQ ID 102; (TMP21) SEQ ID 104 and (RAB2) SEQ ID 106) in proliferating compared to quiescent hepatoma cells suggests that elevated expression of these sequences is functionally significant for liver cancer cell growth. For gene abbreviations see Table 2A to 2D.

[389]

[390] **Figure 108 to 109: Effect of dUT specific inhibitor on growth of proliferating liver cancer (hepatoma) cell lines**

[391] Specific dUT enzyme inhibitor (DMT-dU

(5'-O-(4,4'-Dimethoxytrityl)-2'-deoxyuridine) (Sigma; No. D7279) is added to the hepatoma cells (Hep3B in Figure 108 and HepG2 in Figure 109) at the 10, 25, 50, 100, 250 and 500  $\mu$ M final concentrations in a maximum of 3  $\mu$ l of the appropriate solvent. Following incubation of the cells for 24 (black columns) and 48 hours (white columns) respectively, cell viability is assessed via an MTT

(3-(4,5-dimethyl-2-thiazolyl)-2,5-diphenyl-2H-tetrazolium bromide) reduction assay known in the prior art (CellTiter 96 Aqueous One Solution Cell Proliferation Assay; Promega), and plotted relative to the number of cells in wells not treated with the inhibitor (control = 0; no inhibitor added). The relationship between the increased concentration of the inhibitor and absorbance ( $A=495\text{nm}$ ) reflects the Hep3B/ HepG2 cytostatic/ anti-proliferative response, suggesting that dUT gene correlates with human liver tumor cell proliferation.

### Examples

[392]

[393] **Example 1: Preparation of HCC subtracted cDNA libraries**

[394] RNA is isolated from three pathologist-confirmed HCC tumor samples and from three pathologist-confirmed non-diseased human liver samples using the TRIZOL reagent (Invitrogen) according to standard methods (Chomczynski & Sacchi, 1987, Anal. Biochem. 162:156-159). The tissues used for the generation of cDNA libraries is from patients that provided specific informed consent for utilization of this material for research purposes, including commercial research. mRNA is converted to double stranded cDNA with reverse transcriptase and DNA polymerase as described in the instructions provided in the "PCR select cDNA subtraction kit" from Clontech Laboratories. To enrich for cDNAs specifically increased and decreased in HCC, cDNAs expressed in common and at similar levels in the reference liver pool and in HCC are removed by subtractive suppressive hybridization (SSH) according to the instructions provided in this kit and as described by Diatchenko et al. (1996, Proc. Natl. Acad. Sci.

USA 93:6025-6030). The SSH steps are performed in both directions (subtracting non-diseased liver cDNAs from HCC cDNAs and subtracting HCC cDNAs from non-diseased liver cDNAs) so the resulting cDNA molecules represent nucleic acid sequences both up- and down-regulated in HCC but do not represent those that are not differentially expressed. In addition a normalized but not subtracted HCC cDNA library is generated to better represent rare mRNA transcripts in HCC tissues. These cDNAs are separately cloned into the pCRII vector (Invitrogen) by ligation into this plasmid followed by electrophoretic transformation into *E. coli* XL-1-Blue electroporation-competent cells (Stratagene). The cloning is carried out as described by the supplier of the vector and competent cells. Cloned differentially expressed cDNAs are plated onto selective (ampicillin) media to isolate individual clones. 960 clones are isolated from each SSH library and 384 clones isolated from the normalized HCC library and cultures established in 96-well microtiter plates. Together these cDNA clones provide a unique representation of mRNA expression specific for human HCC tissue.

[395]

[396]       **Example 2: Preparation and hybridization of HCC cDNA microarrays**

[397]       1 ml cultures of the SSH cDNA library clones described above are established and the cDNA inserts amplified by PCR with primers specific to the vector sequence flanking the cDNA inserts. The M13 forward (5'-gtaaaacgacggccag-3'; SEQ ID 42) and M13 reverse primers (5'-caggaaacagctatgac-3'; SEQ ID 43) are employed for the PCR amplification of clone inserts. Fifty microliters of the bacterial cultures are heat denatured at 95°C for 10 minutes, debris removed by centrifugation, and 2 µl of the supernatant included in a standard PCR [1X Amplitaq PCR buffer, 2.5 mM MgCl<sub>2</sub>, 37.5 nM each primer, 0.5 mM each of dATP, dCTP, dGTP and dTTP and 1.5 units Amplitaq DNA polymerase (Applied Biosystems)]. Reaction conditions are 95°C for 5 minutes followed by 35 cycles of: 94°C for 30 seconds, 60°C for 30 seconds, 72°C for 60 seconds; then followed by 72°C for 7 minutes and then cooled to 4°C. Amplification of cDNA inserts is confirmed by electrophoresis of a 5% of the PCR on a 1% agarose gel comprising 0.4 mg/ml ethidium bromide and run in 1X Tris Acetate EDTA (TAE; 40mM Tris-acetate, 1mM EDTA, pH 7.5) buffer. Each of the SSH clone amplified insert sequences is affixed to sialinized glass microscope slides (GAPS Corning) using a GeneticMicrosystems 417 cDNA arrayer robot to generate custom HCC cDNA microarrays. The protocol for spotting the cDNA inserts to the slides is according to that published by Hedge et al. (2000, Biotechniques 29:548-560) except that PCR products are spotted directly from the PCR microtiter plates without purification or adjustment of the cDNA buffer. In addition to the SSH cDNA clone inserts, numerous control DNAs are spotted onto the microarrays as controls for hybridization reactions. Further,

approximately 2000 publicly available cDNA clones corresponding to genes previously reported to be involved in cancer are purchased from the German Genome Research Center (RZPD), expanded, amplified and spotted onto these microarrays as described above. For preparation of hybridization probes, 20 micrograms of RNA from additional pathology-confirmed liver disorders and from the same quantity of pooled non-diseased liver RNA is converted to cy5-fluorescence-labeled and cy3-fluorescence-labeled cDNA, respectively (cy5-CTP and cy3-CTP, Pharmacia) using reverse transcriptase according to the standard methods (Hedge et al., 2000, Biotechniques 29: 548-560). Using this protocol, these labeled cDNAs are competitively hybridized to the HCC microarrays. Following prehybridization at 42°C for 45 minutes in 5X SCC (0.75 M sodium citrate, 75 mM sodium citrate, pH 7.0); 0.1% SDS (sodium dodecyl sulfate) and 1% BSA (bovine serum albumin), the hybridization is carried out overnight at 42°C in buffer comprising 50% formamide, 5XSSC, and 0.1% SDS. Hybridized slides are washed in stringent conditions (twice at 42°C in 1X SSC, 0.1% SDS for 2 minutes each; twice at room temperature in 0.1X SSC, 0.1% SDS for 4 minutes each; and twice at room temperature in 0.05X SSC for 2 minutes each), dried and analyzed with the GeneticMicrosystems 418 cDNA microarray scanner and associated Imagen 4.1 image analysis software according to the manufacture's recommendations.

[398]

[399] **Example 3: Independent verification of differential expression of the nucleic acids and polypeptides according to the invention**

[400] RNA is isolated from human patient samples as described in detail above. HCC samples for this analysis are not from the same patients as employed for production of the HCC SSH library or for cDNA microarray chip hybridization. In addition to HCC samples, RNA is prepared from independent non-diseased liver samples to assess expression of the nucleic acids according to the invention in non-diseased liver tissue. Further, RNA is prepared from additional non-diseased and cancer tissues to assess expression of the nucleic acids according to the invention in other normal human tissues and other human cancers. One mg of RNA is converted to single-strand cDNA with the aid of Superscript reverse transcriptase (Invitrogen) in dATP, dCTP, dGTP, and dTTP (0.4 mM each), 7.5 nM random 6-nucleotide primer (hexamers), 10 mM dithiothreitol and 1 unit RNase inhibitor using standard procedures known in the art (Sambrook et al., Molecular Cloning, 2<sup>nd</sup> ed., 1989, Cold Spring Harbor Press, NY, USA, pp. 5.52-5.55). The presence or absence and the relative concentration of the nucleic acids according to the invention is then confirmed and verified by amplification of these sequences from the cDNA with primer pairs specific to each nucleic acid according to the invention in quantitative kinetic PCR experiments. The

Assay-On-Demand (Applied Biosystems, USA) quantitative PCR method well known for the person skilled in the art might be utilized for verification of disease deregulated expression of nucleic acids according to the invention (Figure 3A/3B). For example, the Assay-On-Demand ID primer numbers for PACE 4, BIGH3, s.t.OClA, SDCCAG28, Rab2, PRKAR1A, PRDX1, IQGAP2, TM4SF4, DAD-1 target genes are given in the following Table 8.

[401]

[402] **Table 8: Target clones and their Assay-On-Demand ID**  
**Table 8**

Gene	Assay ID (Catalogue Number)
PACE4	Hs00159844_m1
BIGH3	Hs00154671_m1
s.t.Ocia	Hs00215197_m1
SDCCAG28	Hs00246405_m1
Rab2	Hs00234094_m1
PRKAR1A	Hs00267597_m1
PRDX1	Hs 00602020_m1
IQGAP2	Hs00183606_m1
TM4SF4	*** Hs00270335_m1
DAD-1	Hs00154671_m1

[403]

[404] In further example, AKR1C1 PCR product is monitored accordingly by incorporation of fluorescent double-stranded DNA intercalating molecules such as SYBR green. The AKR1C1 cDNA is validated by using following primers: AKR1C1-p1, 5'- ttggaaggtcactgaaaatct-3' (SEQ ID 199) and AKR1C1-p2, 5'-gctggctgcggtgaagtgg-3' (SEQ ID 200) verifying the specific expression of this gene (SEQ ID 96) in HCCs when compared to normal liver samples (Figure 104).

[405]

Usually PCR is performed according to the manufacturer's instructions using TaqMan Universal PCR Mastermix (Cat.Nr. 4304437; Applied Biosystems, Branchburg, New Jersey USA). Kinetic quantitative PCR analyses are performed by using the 7000 Sequence Detection System (Applied). The PCR Setup included two reference genes [GAPDH and  $\beta$ -Actin (GAPDH primers used = GAPDH-p1, SEQ ID 187; GAPDH-P2, SEQ ID 188; GAPDH-p3, SEQ ID 189) ( $\beta$ -Actin primers used =  $\beta$ Actin-p1, SEQ ID 190;  $\beta$ Actin-p2, SEQ ID 191;  $\beta$ Actin-p3, SEQ ID 192)] which are used for independent normalisation of the investigated target genes. A standard curve

(125ng, 25ng, 5ng and 1ng) is used for proper calculation of the expression data. The PCR sample contained 12.5 ng of cDNA, 12.5 µl Universal PCR Mastermix and 1.25µl Assay-On-Demand reagent to give a final volume of 25µl. PCR conditions are used according to the manufacture's instructions (2 min 50°C, 10 min 95°C followed by 40 cycles of 15 sec 95°C and 1 min at 60°C). Amplification of cDNA inserts is additionally confirmed by electrophoresis of a 10% of the PCR on a 2.5% agarose gel comprising 0.5 mg/ml ethidium bromide and run in 1X Tris Acetate EDTA (TAE) buffer. Standard controls for RT-PCR including RNase treatment of samples prior to cDNA synthesis and omission of reverse transcriptase routinely demonstrate the specificity of these reactions. The kinetic quantitative RT-PCR (Q-PCR) verifies the over expression of sequences according to the invention in liver cancer and other liver disorder relative to non-diseased liver (Figures 100 to 104).

[406] Furthermore, the protein expression analyses indicate that for example SDCCAG28 protein, the functional product of SDCCAG28 mRNA specifically upregulated in HCC, is also significantly overexpressed in HCC (Figure 105). To detect SDCCAG28 protein expression in HCC samples standard western blot analysis known in the prior art is performed using protein extracts derived from frozen tissues (stored in liquid nitrogen). The 50 µm sections are obtained (HCC, normal liver) using a refrigerated microtome (cyrocut, Leica CM3050), wherein the identity and homogeneity of the tissues under scrutiny is verified by H&E-staining of sections taken before, in between and after each cutting process. Tissues sections (HCC, normal liver), SDCCAG28 antigen (Morphosys AG, Germany) and HepG2 cells are resuspended in ice-cold RIPA-buffer (50 mM Tris-HCl pH 7.4, 250 mM NaCl, 0.1% SDS, 1% deoxycholate, 1% NP-40) supplemented with 2 µg/ml leupeptin, 2 µg/ml pepstatin, 2 µg/ml aprotinin, 1 mM phenylmethylsulfonylfluoride (PMSF), and 2 mM dithiothreitol followed by homogenization through sonication (2 bursts of 5 seconds) on ice. After incubation for 20 minutes on ice, the lysates are cleared by two centrifugational steps in a micro-centrifuge at 13 000 rpm for 15 minutes at 4°C and the supernatants are collected. Protein concentrations are determined by the Bradford assay(Biorad) using bovine serum albumin as a standard. Equal amounts of protein (typically 10-30 µg) are separated on a 12% SDS-PAGE gel and transferred electrophoretically to a polyvinylidene difluoride (PVDF) membrane (Hybond-P, Amersham Biosciences) through Semidry-blotting (TE 70, Amersham). The membrane is blocked for 1 hour (or overnight) at room temperature in blocking solution [5 to 10% milkpowder (Micrbiology/Lactan:1.15363.0500) in TBS-T (25 mM Tris-HCl pH 7.4, 137 mM NaCl, 3 mM KCl, comprising 0.1% Tween-20 (Merck: 822184) and 2% BSA (Sigma:A-7906)] and incubated with the primary antibody specific for the SDCCAG28 recombinant protein (Morphosys AG, Germany), usually in the concentration between

30ng to 50ng/ml in TBS-T/1% milk solution at 4°C overnight with agitation. After removal of the primary antibody solution and several washes in TBS-T, the membrane is incubated with a mouse anti-HIS antibody to specifically detect the primary antibody (Dianova, 1:25000) followed by a rabbit anti-mouse HRP (horse-radish peroxidase)-conjugated antibody (Dako, 1: 1000) for one hour at room temperature. Following several washes in TBS-T, detection is performed through chemiluminescence (ECL, Amersham) detection of HRP activity and exposing the membrane to x-ray film.

- [407] These data provide independent verification of deregulated expression of the nucleic acids and polypeptides according to the invention in HCC. Expression of the nucleic acids and polypeptides according to the invention is either absent or observed only at very low levels in non-diseased liver, thereby validating the differential expression of these nucleic acids identified by hybridization to the cDNA microarray. The results provide surprising evidence that the nucleic acids and polypeptides according to the invention can be used to diagnose, prevent and/or treat disorders according to the invention.

[408]

[409] **Example 4: Sequences according to the invention are increased in proliferating liver cancer (hepatoma) cell lines**

- [410] Human hepatoma cell lines (Hep3B, HepG2) are cultured in DMEM supplemented with 10% fetal bovine serum (FBS) in a humidified incubator with 5% CO<sub>2</sub> at 37°C. The cells are split to about 20% confluency and subsequently rendered quiescent by culturing in the absence of serum for 3 days. After the starvation period, the cells are stimulated to proliferate by the addition of 10 % FBS to the media. Samples are taken before and following the induction of cell growth (0, 8 and 12 hours) for the preparation of RNA and for determination of the position of the cells in the cell cycle by FACS (fluorescence activated cell sorting) analysis. Accordingly, to determine the cell cycle distribution by propidium iodide (PI) staining, the cells are harvested by trypsinization, washed twice with phosphate buffered saline (PBS) and finally resuspended in 500 µl PBS. Subsequently, 5 ml prechilled methanol is added. After 10 minutes incubation at -20°C the cell suspension is directly used for FACS analysis following 3 times washing in PBS, resuspended in 500 µl propidium iodide (PI) staining buffer (DNA-Prep Stain, Part No. 6604452; Beckman Coulter) and incubated for 15 minutes at 37°C. Finally, 70 µl of 1M NaCl is added and the samples are kept on ice protected from light prior to analysis on an EPICS XL-MCL flow cytometer (Beckman Coulter). Cells prepared from an asynchronous cell population are used as reference.

- [411] The isolated RNA is used to monitor the expression of genes in quiescent vs. pro-

liferating hepatoma cells by cDNA microarray analysis. Following labeling with fluorescent dyes as described in example 2, the RNAs are hybridized on a specifically developed HCC- specific cDNA microarray chip that also contained control genes which are known to be expressed in a cell cycle dependent manner. Finally, the data are analysed using ImaGene 4.1 and GeneSight software packages. The signals obtained for 0 hours samples isolated before the addition of serum are used as reference. The  $\log_2$ -transformed ratios of serum-stimulated vs. quiescent expression values from the cDNA experiment readout is provided in Figure 106 to 107.

[412] These data indicate that the sequences according to the invention are correlated with human liver tumor cell proliferation. Compared to the state of the art, these nucleic acids and polypeptides therefore surprisingly allow improved, more sensitive, earlier, faster, and/or non-invasive diagnosis of the liver disorders and/or epithelial cancers.

[413]

[414] **Example 5: Effect of dUT specific small molecule inhibitor on growth of proliferating liver cancer (hepatoma) cell lines**

[415] To determine the effects of small molecule inhibitors of activity of enzyme polypeptides according to the invention on the growth of human hepatoma cells, for example a specific dUT inhibitor (DMT-dU (5'-O-(4,4'-Dimethoxytrityl)-2'-deoxyuridine) (Sigma; No. D7279) is employed. Hep3B or HepG2 cells are seeded into 96-well plates at 10,000 and 7,500 cells, respectively, in a total volume of 150  $\mu$ l of growth DMEM media supplemented with 10% fetal calf serum. The next day of incubation at 37 °C, the dUT enzyme inhibitor is added to the cells at the 10, 25, 50, 100, 250 and 500  $\mu$ M final concentrations in a maximum of 3  $\mu$ l of the appropriate solvent. Following incubation of the cells for 24 and 48 hours, cell viability is assessed via an MTT (3-(4,5-dimethyl-2-thiazolyl)-2,5-diphenyl-2H-tetrazolium bromide) reduction assay known in the prior art (CellTiter 96 Aqueous One Solution Cell Proliferation Assay; Promega) according to the manufacturer's instructions. Thirty  $\mu$ l of the assay reagent are added directly to the culture wells, incubated for 1-2 hours and then absorbance at 495 nm is recorded using a microtiter plate reader (Anthos 2010; Anthos Labtec Instruments). Each value represents the mean of at least 4 replicates. Control cells (= 0) receive solvent only (Figures 108 to 109)

[416] The relationship between the increased concentration of the inhibitor and absorbance indicates that application of the aforementioned specific dUT inhibitor to hepatoma cells elicits a cytostatic/ anti-proliferative response, suggesting a specific role of the dUT gene in human liver tumor cell proliferation.

[417]

[418] **Example 6: Elevation of enzymatic activity in hepatoma cells correlates with**



**AKR1C1 target gene overexpression in liver disorders**

- [419] A comparison of the enzymatic activity of a target gene encoded polypeptide gives insight whether a deregulation of mRNA transcript is also reflected by a significant increase in activity that indicates its functional role in tumor biology. In a substrate-specific reaction, the activity of AKR1C1 (SEQ ID 96) is determined (see below Table 9).
- [420] Enzymatic assays are performed by using lysates prepared from frozen tissues (stored in liquid nitrogen) or from cell pellets derived from asynchronously growing human hepatoma cell lines (Hep3B, HepG2). 50  $\mu$ m sections obtained from pieces of frozen tissues using a freezing microtome (Cryocut, Leica CM3050) and the identity and homogeneity of the tissues under scrutiny is verified by a pathologist following H & E-staining of sections taken before, in between, and after each cutting process. Tissues sections as well as frozen cell pellets are resuspended in ice-cold lysis buffer (50 mM KPO<sub>4</sub> pH 7.0, 10 mM KOAc, 2 mM MgCl<sub>2</sub>) supplemented with 2  $\mu$ g/ml leupeptin, 2  $\mu$ g/ml pepstatin, 2  $\mu$ g/ml aprotinin, 1 mM phenylmethylsulfonylfluoride, and 2 mM dithiothreitol followed by homogenization through sonication (2 bursts of 3 seconds) on ice. After incubation for 15 minutes on ice, the lysates are cleared by two centrifugation steps in a microcentrifuge at 13,000 rpm for 15 minutes at 4°C and the supernatants are collected. Protein concentrations are determined by the Bradford assay (Biorad) using bovine serum albumin as a standard.
- [421] The AKR1C1 enzymatic activity is measured spectrophotometrically based on the oxidation of 1-acenaphthenol in 1.0 ml systems containing 1 mM 1-acenaphthenol (in 4% methanol), 2.3 mM NAD<sup>+</sup>, and various amounts of whole cell lysate in 100 mM potassium phosphate buffer (pH 7.0). Reactions runs at 25°C wherein the change in absorbance of pyridine nucleotide over time is monitored at 340 nm on a Beckman DU640 spectrophotometer. Absorbance values are plotted versus time, and slope-values versus time (min<sup>-1</sup>) are calculated from initial reaction velocities using linear least-squares regression analysis, see Table 9 (HCC = Hepatocellular Carcinoma; NNL = Non-Neoplastic (Normal) Liver).

[422]

[423]

[424]

[425]

[426] **Table 9: Enzymatic assay for AKR1C1 (SEQ ID 96)**

[427]

**Table 9**

Tissue	Protein con-	Slope	Weighted Mean of
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	centration [ $\mu\text{g}$ ]	time <sup>-1</sup> [min <sup>-1</sup> ]	the slope [min <sup>-1</sup> ]
NNL1	100	0.0048	0.0043
	200	0.0076	
NNL2	100	0.0057	0.0054
	200	0.0102	
HCC11	100	0.0130	0.0127
	200	0.0247	
HCC28	100	0.0097	0.0095
	200	0.0187	
HCC30	100	0.0334	0.0317
	200	0.0599	
HCC2	100	0.0136	0.0102
	200	0.0137	
HCC13	100	0.0158	0.0128
	200	0.0197	

[428]

[429]

The HCC samples (HCC11, HCC28, HCC30 and HCC2) are characterized by a weighted mean of the slope approximately 2-3-fold higher than the NNL samples. These data clearly show the correlation between the upregulation of AKR1C1 gene transcript in HCC with the induction of the AKR1C1 enzymatic activity in hepatoma cell lines, suggesting that the sequences according to the invention are correlated with human liver tumor cell proliferation. Compared to the state of the art, these nucleic acids and polypeptides therefore surprisingly allow improved, more sensitive, earlier, faster, and/or non-invasive diagnosis of the liver disorders and/or epithelial cancers.

[430]

[431]

[432]

#### **Example 7: A method of diagnosing using HCC specific probes**

[433]

A diagnostic method for disorders according to the invention preferably based on the polymerase chain reaction (PCR) can be established. A standard PCR detection of nucleic acid sequences of the invention can be sufficient to identify, for example, circulating HCC tumor cells in the blood stream of the patient. Detection of expression of nucleic acid sequences of the invention in tumor biopsy material however, such as from a fine needle biopsy, would also be a preferred indication for this diagnostic

procedure. Nucleic acid sequences of the invention, ZNF216 (SEQ ID 95) for example, are not detected in most non-diseased tissues and relatively specifically expressed in e.g. HCC. Elevated expression of this nucleic acid in FNH and HCC is also demonstrated indicating the potential discriminatory power of such an approach for differential diagnosis of liver diseases (Figures 1 and 9; Tables 3A/4A).

- [434] The PCR diagnostic would preferably require approximately 1 pg, preferably at least 100 ng, more preferably at least 1 µg of RNA isolated from patient material. In the preferred utilization the RNA would be isolated according to standard procedures from, e.g., the white blood cell fraction preferably from circulating blood obtained by the minimally invasive venupuncture procedure. In this preferred case, the procedure would detect the presence of HCC tumor cells in the blood circulatory system. RNA could similarly be isolated from liver or other tissue biopsy material.
- [435] For specific detection of ZNF216, the PCR diagnostic would include several primers specific for ZNF216 nucleic acid sequence, including a specific primer set for cDNA synthesis from the RNA generated from the patient sample, such as for example (ZNF216-p1, 5'-ttctttctgcacatgaaacatctg-3' (SEQ ID 195). Also included would be forward and reverse PCR primers specific for ZNF 216 nucleic acid sequence such as for example, ZNF216-p2, 5'-gagaggacaaaataactacc-3' (SEQ ID 196) and ZNF216-p3, 5'-caattcaggagctttttcttca-3' (SEQ ID 197), and for increased specificity and heightened sensitivity a fluorescently-labeled hydrolysis probe would be included such as, for example, ZNF216-pr, 5'-tactgggctgagaaactgatggactgggctga-3', SEQ ID 198 (from nucleotide 694 to 663 of the SEQ ID 95 reverse strand). The specificity of this detection assay may be further heightened with alternative primers specific for the ZNF216 sequence including an independent pair of specific PCR forward and reverse primers ("nested" primers) located on the amplicon of the outer forward and reverse PCR primers. In this case the probe primer would be specific for the amplicon the nested PCR primer pair.
- [436] Quantitative assessment of AKR1C1 mRNA levels, for example, may also be achieved in such detection strategies as illustrated in Figure 3C using kinetic quantitative PCR with, for example:
- [437] cDNA may be prepared from the patient RNA sample following digestion of the RNA with RNase-free DNase-1 (Roche) to eliminate potential contamination by genomic DNA. This contamination possibility is further controlled by including primers for PCR amplification from sequences of different exons of the gene such that PCR products resulting from a genomic DNA template (and thereby not reflective of expression of the mRNA corresponding to for example ZNF216) would be larger than the RNA specific PCR products. cDNA synthesis can e.g. be primed by the ZNF216-specific ZNF216-p1 (SEQ ID 195; at about 1 µM) with the aid of reverse tran-

scriptase [such as Maloney murine leukemia virus reverse transcriptase (Roche) at about 2 unit/reaction] in an appropriate buffer such as 50 mM Tris-HCl, 6 mM MgCl<sub>2</sub>, 40 mM KCl, and 10 mM dithiothreitol, pH 8.5. Also required in the cDNA synthesis reaction is dATP, dCTP, dGTP and dTTP, each at about 1 mM, RNase inhibitor, such as placental RNase inhibitor (Roche) at about 1-10 units/reaction. cDNA synthesis would be preferably carried out at 42°C for 30 to 60 minutes followed by heating at 95°C for 10 minutes to denature the RNA template. The resulting cDNA can be employed as the template for a PCR to detect ZNF 216 in the blood (or liver or tissue biopsy sample). The additional reagents required for PCR detection of ZNF216 would preferably also be provided including: 10X Taq DNA polymerase buffer (500 mM Tris-Cl pH 8.3, 25 mM MgCl<sub>2</sub>, 0.1% Triton X-100); a mixture of dATP, dCTP, dGTP and dTTP for a final concentration of 0.2 mM each; Taq DNA polymerase (2.5U/reaction), and ZNF216 specific primers such as ZNF216-p1 (SEQ ID 195), ZNF216-p2 (SEQ ID 196) and ZNF216-p3, (SEQ ID 197), and for increased specificity and heightened sensitivity a fluorescently-labelled hydrolysis probe ZNF216-pr, SEQ ID 198 (0.1 - 1 µM final concentration). A positive control for PCR amplification such DNA from a plasmid clone with the ZNF216 sequence insert would preferably also be included (1-10 ng/reaction). The PCR can e.g. be carried out over 22-40 cycles of 95°C for 30 seconds, 60°C for 30 seconds, 72°C for 60 seconds. As indicated above, preferred additional sensitivity and specificity may be achieved in this diagnostic procedure by utilization of the additional ZNF216 primer set located within the sequence amplified with the original PCR primer set. In this case a subsequent PCR under conditions similar to those utilized in the first PCR reaction except that would be employed to amplify the nested sequence in a reaction that included 1-10 µl of the first PCR as the template DNA. Alternatively, the reaction may preferably be carried with the first primer set for 10-15 cycles after which and 1-10 µl of this reaction then included as template in a new PCR reaction with nested primers (and including all the necessary PCR components). Detection of ZNF216 specific PCR product(s) should preferably utilize agarose gel electrophoresis as is known in the art and described in previous examples. Included in the diagnostic should preferably be a comparable fluid or tissue extract as a control for such PCR-based diagnostic test. This may include serum or plasma from non-diseased individuals and/or serum, plasma or tissue extracts from an appropriate animal model. If the PCR-determined expression of the nucleic acid according to the invention such as the product of the reaction with primers ZNF216-p1 (SEQ ID 195), ZNF216-p2 (SEQ ID 196), ZNF216-p3 (SEQ ID 197) and ZNF 216-pr (SEQ ID 198) is upregulated in the sample isolated from the patient relative to the control and if in particular the upregulated expression essentially matches the disorder specific (mean) expression ratios then such matching is indicative

of the patient suffering from the disorder. Variations on this approach can also be appreciated. The cDNA synthesis and PCR amplifications can be carried out sequentially or simultaneously in a single reaction vessel utilizing heat stable DNA polymerases with reverse transcriptase activities, such as provided by the Titan one-tube or *Carboxydotherrnus* DNA polymerase one-set RT-PCR systems from Roche. Alternatively the PCR product can be monitored by incorporation of fluorescently labeled primers or various fluorescence-based indicators of PCR product including the Taqman probe hydrolysis systems, as described above and with fluorescent double-stranded DNA intercalating molecules such as SYBR green. The fluorescent-based approaches provide advantage as the accumulation of PCR product can be continuously monitored to achieve sensitive quantitative assessment of expression of the nucleic acid according to the invention. This should be particularly advantageous for nucleic acids increased in blood or tissues of disorders according to the invention but also present at lower levels in non-diseased patients and tissues such that quantitative information about the level of expression of the nucleic acid is acquired. Further, as with this example, accurate quantitation of nucleic acid expression levels contributes to differential diagnosis, between cirrhosis and HCC for example. Comparison of this data with supplied standards indicative of disease and absence of disease provides an important advantage for such a diagnostic procedure.

[438] Additional variations on this diagnostic strategy include simultaneous detection of multiple nucleic acids according to the invention and/or of nucleic acids according to the invention together with other nucleic acids implicated in the disorder. Further hybridization-based diagnostic detection of nucleic acids according to the invention is also envisioned. In this case mRNA detection preferably utilizing detection of RNA transferred to a membrane by capillary or electrophoretic blotting, RNase protection or in situ hybridization on patient cells or tissue biopsy samples is also effective.

[439] By similar methods and variants thereof the nucleic acids according to the invention and/or of nucleic acids according to the invention together with other nucleic acids can be utilized for diagnosis of the disorders according to the invention.

[440]

[441] **Example 8: A method of diagnosing via antibody detection of polypeptides according to the invention**

[442] A preferred diagnostic method for disorders according to the invention is based on antibodies directed against a polypeptide according to the invention. For example, a diagnostic procedure may preferably employ serum detection of specific upregulated gene proteins via enzyme-linked immunosorbent assay (ELISA) assay. In a simple form the diagnostic assay preferably includes a microtiter plate or strip of microtiter wells, e.g., thoroughly coated with an isolated and purified antibody specific to a

polypeptide according to the invention such as, ZNF216 (SEQ ID 2), AKR1C1 (SEQ ID 3). The antibody may for example be an affinity purified polyclonal antibody, such as is commonly raised in rabbits, for example, or a purified monoclonal antibody such as is commonly produced in mice according to procedures well established in the art (Cooper, H.M. & Paterson, Y., (2000), *In Current Protocols in Molecular Biology* (Ausubel, F.A. et al., eds.) pp. 11.12.1 – 11.12.9, Greene Publ. & Wiley Intersci., NY); (Fuller S.A. et al., (1992), *In Current Protocols in Molecular Biology* (Ausubel, F.A. et al., eds.) pp. 11.4.1 – 11.9.3, Greene Publ. & Wiley Intersci., NY). Preferably, the antibody may be a recombinant antibody obtained from phage display library panning and purification as has been described by Knappik et al. (2000, *J. Molec. Biol.* 296:57-86) or by Chadd and Chamow (2001 *Curr. Opin. Biotechnol.* 12:188-94), or a fragment thereof. The antibody coating is preferably achieved by dilution of the anti-ZNF216 antibody or anti-AKR1C1 antibody to 1-100 µg/ml in a standard coating solution such as phosphate buffered saline (PBS). The antibody is preferably bound to the absorptive surface of the microtiter well (such as a Nunc Maxisorp immunoplate) for 60 minutes at 37°C, or overnight at room temperature or 4°C. Prior to binding sample to the coated wells, the wells are preferably thoroughly blocked from non-specific binding by incubation for 15-60 minutes at room temperature in a concentrated protein solution such as 5% bovine serum albumin in phosphate buffered saline or 5% non-fat dry milk powder resuspended in the same buffer. Preferably, the patient sample material is then applied to the microtiter wells, diluted into the blocking solution to increase specificity of detection. The sample may be for example plasma or serum or protein extract from tissue biopsy or surgical resection prepared according to methods well known in the art (Smith, J.A. (2001) *In, Current Protocols in Molecular Biology*, Ausubel, F.A. et al., eds) pp. 10.0.1- 10.0.23, Greene Publ. & Wiley Intersci., NY). In particular, the patient sample is brought into contact with the antibody-coated well for 30-120 minutes (or longer) at room temperature or at 4°C. Non-specifically interacting proteins are preferably removed by extensive washing with a standard wash buffer such as 0.1 M Tris-buffered saline with 0.02-0.1% Tween 20, for example. Washes are preferably carried out for 3-10 minutes and repeated 3-5 times. Detection of ZNF216 polypeptide in the patient sample is for example achieved by subsequent binding reaction with a second, independent anti-ZNF216 antibody, generated as described above, recognizing a distinct epitope on the ZNF216 polypeptide in the standard two-site 'sandwich' type ELISA. Binding of the second anti-ZNF216 antibody or AKR1C1 antibody is for example achieved by incubating the wells in the antibody (at a concentration of 1-100 µg/ml in blocking solution, for example) at room temperature for 30-60 minutes followed by extensive washing as in the previous step. The second antibody may preferably be directly coupled to an enzyme capable of producing a

colorigenic or fluorogenic reaction product in the presence of an appropriate substrate, such as alkaline phosphatase. Alternatively, for example an anti-species and anti-isotype specific third antibody, so coupled to an enzyme, is employed to generate a reaction product that preferably can be detected in a standard spectrophotometric plate reader instrument. For the reaction product development, the washed (as above) antibody-antigen-enzyme complex is preferably exposed to the colorigenic substrate, such as AttoPhos from Roche for about 10 minutes at room temperature, the reaction may be stopped with a low pH buffer such as 50 mM Tris-HCl pH 5.5, or can instead be directly assayed. The amount of specifically bound ZNF216 polypeptide or AKR1C1 polypeptide is for example determined by measurement of the amount of the enzymatic reaction product in each well following excitation at the appropriate wavelength in the spectrophotometer (420 nm in this case). Measurement is preferably made in the plate reader at the emission wavelength (560 nm in this case). Preferably included in the diagnostic is a ZNF216 protein standard or an AKR1C1 protein standard, such as purified recombinant ZNF216 polypeptide or AKR1C1 polypeptide, for example. A dilution series of this protein standard is preferably included in parallel in the ELISA as a control for the reactions and to deduce a protein standard curve for comparison of polypeptide expression levels as is well known in the art. A concentration range corresponding indicative of the particular liver disorder(s) should preferably be provided in the diagnostic. In addition, a comparable fluid or tissue extract should preferably also be included as a control for such ELISA test. This may preferably include serum or plasma from non-diseased individuals and/or serum, plasma or tissue extracts from an appropriate animal model. Such ELISA detection diagnostics are common in the art (see for example, Hauschild et al., 2001, Cancer Res. 158:169-77). The sample: control protein levels determined by ELISA are compared with ELISA-determined disorder specific protein expression ratio values preferably determined in pathologist-confirmed tissues of patients suffering from a disorder according to the invention in relation to control samples. In case the protein level of the sample: control essentially matches the disorder specific protein expression ratio values such matching is preferably indicative of the patient suffering from the disorder. Preferably such diagnosis is carried out for more than 1 polypeptide according to the invention.

[443] In addition the diagnostic may be directed to detecting an endogenous antibody directed against a polypeptide according to the invention, or a functional variant thereof or fragment thereof present in the sample isolated from a patient which antibody or fragment thereof is directed against a polypeptide according to the invention. Detection of such autoimmune antibodies may be accomplished by methods generally known to the skilled artisan, e.g. by immunoaffinity assays such the ELISA

described in detail above using polypeptides according to the invention or functional variants thereof or parts thereof as a probe. The presence of such autoimmune antibodies is indicative of the patient suffering from a disorder according to the invention.

[444] In addition or alternatively, a relevant diagnostic kit based upon immunohistochemical detection of at least one polypeptide according to the invention can be formulated. In such a kit, for example a purified antibody or antibodies specific for the polypeptide(s) according to the invention can be included as well as preferably the reagents necessary to detect the binding of the antibody (ies) to patient cells or tissue sections. These reagents include, for example a specific anti-species and subtype specific secondary antibody -directed against a polypeptide according to the invention of a functional variant thereof- preferably coupled to an enzyme capable of catalysis of e.g. a colorigenic substrate or coupled to a fluorophore (such as Texas Red, for example). Preferably the enzymatic substrate would also be included as well as washing and incubation buffers. An additional optional component of such a kit may be a section of positive control tissue, e.g. liver, or tissues or a section from a packed pellet of cells specifically expressing the polypeptide(s) as a positive tissue control. Instructions provided would include preferred and/or alternative methods of antigen retrieval for detection of the polypeptide(s) according to the invention or e.g., indication that frozen, rather than formalin fixed and paraffin-embedded tissue material should be employed. In this case, recommendations would preferably be included for fixation of frozen tissue sample sections, such as immersion in ice-cold acetone for 10 minutes. Further instructions would preferably provide recommendations for the concentration of antibodies to use in the detection of the gene product(s) as well as e.g., recommended and suggested incubation times and temperatures for exposure of the tissue to the immunological reagents provided. Preferred reaction buffers for the antibody incubations, such as 0.01% - 0.1% tween-20 comprising phosphate buffered saline including 3% normal sheep serum, could also be included. Further, specific conditions for washing of the tissue sections prior to and following incubation in the specific antibody would be preferably included, such as for example, 4 washes with 0.1% tween-20 comprising phosphate buffered saline for 5 minutes each. Such immunohistochemical detection protocols are known to a person skilled in the art. In general the kit would preferably include a panel of images of specific immunohistochemical staining results from positive and negative tissue examples and in particular tables indicating which result is indicative of the patient suffering from the disorder to be diagnosed as a user guide. Utilization of such a kit would preferably rule out, support or confirm diagnoses of the aforementioned liver disorders, liver cancer, or epithelial cancers according to the invention.



[445] As specified above for nucleic acid-based diagnostic approaches, diagnostics based on detection and/or quantitation of polypeptides according to the invention may include 1 or more of such polypeptides. Moreover, simultaneous detection of such polypeptides together with other peptides implicated in the disorders according to the invention may be employed in such diagnostics.

[446] It will be apparent to those skilled in the art that various modifications can be made to the compositions and processes of this invention. Thus, it is intended that the present invention cover such modifications and variations, provided they come within the scope of the appended claims and their equivalents. All publications cited herein are incorporated in their entireties by reference.

[447]

## Claims

- [001] A diagnostic comprising at least one compound selected from the group consisting of the polypeptide according to SEQ ID 1 to 93, a nucleic acid encoding one of the aforementioned polypeptides, a variant of one of the aforementioned nucleic acids, and an antibody or an antibody fragment directed against one of the aforementioned polypeptides, combined or together with suitable additives or auxiliaries.
- [002] The diagnostic according to claim 1, wherein the nucleic acid is a probe.
- [003] The diagnostic according to claim 2, wherein the probe is a DNA probe.
- [004] A pharmaceutical composition comprising at least one component selected from the group consisting of the polypeptide according to claim 1, a polypeptide according to SEQ ID 1 to 93, a functional variant of one of the aforementioned polypeptides, a nucleic acid encoding one of the aforementioned polypeptides, a variant of one of the aforementioned nucleic acids, a nucleic acid which is a non-functional mutant variant of one of the aforementioned nucleic acids, a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, a vector comprising one of the aforementioned nucleic acids, a cell comprising one of the aforementioned nucleic acids, a cell comprising the aforementioned vector, an antibody or a fragment of the antibody directed against one of the aforementioned polypeptides, an antibody or a fragment of the antibody directed against a functional variant of one of the aforementioned polypeptides, a vector comprising a nucleic acid coding for one of the aforementioned antibodies, a cell comprising the vector comprising a nucleic acid coding for one of the aforementioned antibodies, and a cell comprising the vector comprising a nucleic acid coding for one of the aforementioned antibody fragments, combined or together with suitable additives or auxiliaries.
- [005] The pharmaceutical composition according to claim 4, wherein the nucleic acid having a complementary sequence is an antisense molecule or an RNA interference molecule.
- [006] A method of diagnosis of a liver disorder or an epithelial cancer, wherein at least one compound selected from the group consisting of a polypeptide according to the sequence of SEQ ID 1 to SEQ ID 93, a functional variant of one of the aforementioned polypeptides, a nucleic acid encoding one of the aforementioned polypeptides, a variant of one of the aforementioned nucleic acids, a nucleic acid which is a non-functional mutant variant of one of the aforementioned nucleic acids, a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, an antibody or a fragment of the antibody directed

against one of the aforementioned polypeptides, and an antibody or a fragment of the antibody directed against a functional variant of one of the aforementioned polypeptides, is identified in the sample of a patient and compared with at least one compound of a reference library or of a reference sample.

- [007] The method according to claim 6, wherein the liver disorder, is a disorder selected from the group consisting of cirrhosis, alcoholic liver disease, chronic hepatitis, Wilson's Disease, haemochromatosis, hepatocellular carcinoma, benign liver neoplasms, and focal nodular hyperplasia.
- [008] The method according to claim 6, wherein the epithelial cancer is an adenocarcinoma of an organ selected from the group consisting of the lung, the stomach, the kidney, the colon, the prostate, the skin, and the breast.
- [009] A method of treating a patient suffering from a liver disorder or an epithelial cancer, wherein at least one component selected from the group consisting of a polypeptide according SEQ ID 1 to 93, a functional variant of one of the aforementioned polypeptides, a nucleic acid encoding one of the aforementioned polypeptides, a variant of one of the aforementioned nucleic acids, a nucleic acid which is a non-functional mutant variant of one of the aforementioned nucleic acids, a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, a vector comprising one of the aforementioned nucleic acids, a cell comprising one of the aforementioned nucleic acids, a cell comprising the aforementioned vector, an antibody or a fragment of the antibody directed against one of the aforementioned polypeptides, an antibody or a fragment of the antibody directed against a functional variant of one of the aforementioned polypeptides, a vector comprising a nucleic acid coding for the antibody, a cell comprising the vector comprising a nucleic acid coding for the antibody, and a cell comprising the vector comprising a nucleic acid coding for the antibody fragment, combined or together with suitable additives or auxiliaries, is administered to the patient in need of a the treatment in a therapeutically effective amount.
- [010] The method of treating according to claim 9, wherein the nucleic acid having a complementary sequence is an antisense molecule or an RNA interference molecule.
- [011] The method of treating according to claim 10, wherein the RNA interference molecule is administered in the form of a double stranded RNA or a vector expressing the double stranded RNA.
- [012] The method according to claim 10, wherein the RNA interference molecule has a size range selected from the group consisting of from 15 to 30 nucleotides.
- [013] The method according to one of claims 9 to 12, wherein the liver disorder, is a

disorder selected from the group consisting of cirrhosis, alcoholic liver disease, chronic hepatitis, Wilson's Disease, haemochromatosis, hepatocellular carcinoma, benign liver neoplasms, and focal nodular hyperplasia.

[014] The method according to one of claims 9 to 13, wherein the epithelial cancer is an adenocarcinoma of an organ selected from the group consisting of the lung, the stomach, the kidney, the colon, the prostate, the skin, and the breast.

[015] A method of stimulating an immune response to a polypeptide according to the sequence of SEQ ID 1 to SEQ ID 93, or a functional variant thereof in a patient suffering from a liver disorder or an epithelial cancer, wherein at least one component selected from the group consisting of a polypeptide according to the sequence of SEQ ID 1 to SEQ ID 93, a functional variant thereof, a nucleic acid encoding one of the aforementioned polypeptides, a variant of one of the aforementioned nucleic acids, a vector comprising one of the aforementioned nucleic acids, a cell comprising one of the aforementioned nucleic acids, and a cell comprising the aforementioned vector, is administered to the patient in need of such treatment in an amount effective to stimulate the immune response in the patient.

[016] A method for identifying at least one nucleic acid according to SEQ ID 94 to SEQ ID 186, or a variant thereof differentially expressed in a sample isolated from a patient relative to a reference library or a reference sample comprising the following steps: (a) detecting the expression of at least one nucleic acid according to SEQ ID 94 to SEQ ID 186, or a variant thereof in a sample isolated from a patient, (b) comparing the expression of said nucleic acid(s) detected in step (a) with the expression of the said nucleic acid(s) in a reference library or in a reference sample, (c) identifying said nucleic acid(s) which is (are) differentially expressed in the sample isolated from the patient compared to the reference library or the reference sample.

[017] A method of diagnosing a liver disorder or an epithelial cancer comprising the following steps: (a) detecting the expression of at least one nucleic acid according to SEQ ID 94 to SEQ ID 186, or a variant thereof in a sample isolated from a patient, (b) comparing the expression of said nucleic acid(s) detected in step (a) with the expression of said nucleic acid(s) in a reference library or in a reference sample, (c) identifying said(s) nucleic acid which is (are) differentially expressed in the sample isolated from the patient compared to the reference library or the reference sample, and (d) matching said nucleic acid(s) identified in step (c) to said nucleic acid(s) differentially expressed in a pathologic reference sample or pathologic reference library, wherein the matched nucleic acid(s) is (are) indicative of the patient suffering from a liver disorder or an

epithelial cancer.

- [018] The method according to claim 17, wherein in step (a) at least 2 nucleic acids are identified.
- [019] The method according to claim 17, wherein in step (a) the detection of said nucleic acid(s) is (are) by PCR based detection or by a hybridization assay.
- [020] The method according to one of claims 17 to 19, wherein in step (b) the expression of said nucleic acid(s) is compared by a method selected from the group consisting of solid-phase based screening methods, hybridization, subtractive hybridization, differential display, and RNase protection assay.
- [021] The method according to one of claims 17 to 20, wherein the sample isolated from the patient is selected from the group consisting of liver tissue, a liver cell, tissue from another organ subject to cancerous transformation, a cell from this organ, blood, serum, plasma, ascitic fluid, pleural effusion, cerebral spinal fluid, saliva, urine, semen, and feces.
- [022] The method according to one of claims 17 to 21, wherein the reference sample is isolated from a source selected from a non-diseased sample of the same patient and a non-diseased sample from another subject.
- [023] The method according to one of claims 17 to 22, wherein the reference sample is selected from the group consisting of liver tissue, a liver cell, blood, serum, plasma, ascitic fluid, pleural effusion, cerebral spinal fluid, saliva, urine, semen, and feces.
- [024] The method according to one of claims 17 to 23, wherein the reference library is an expression library or a data base comprising clones or data on liver disorder-specific expression of said nucleic acid(s) of step (a).
- [025] The method according to one of claims 17 to 24, wherein the pathologic reference sample is isolated from a source selected from a diseased sample from another patient suffering from a liver disorder or epithelial cancer.
- [026] The method according to claim 17 to 25, wherein the pathologic reference library is a data base comprising data on differential expression of said nucleic acid(s) in step (a) in samples isolated from another patient suffering from a liver disorder or epithelial cancer relative to control expression in a reference sample or reference library.
- [027] The method according to claim 17 to 26, wherein the liver disorder, is a disorder selected from the group consisting of hepatocellular carcinoma, benign liver neoplasms, and cirrhosis.
- [028] The method according to claim 17 to 26, wherein the epithelial cancer is an adenocarcinoma of an organ selected from the group consisting of the lung, the stomach, the kidney, the colon, the prostate, the skin and the breast.

- [029] A method for identifying at least one polypeptide according to SEQ ID 1 to SEQ ID 93, or a functional variant thereof differentially expressed in a sample isolated from a patient relative to a reference library or a reference sample comprising the following steps: (a) detecting the expression of at least one polypeptide according to SEQ ID 1 to SEQ ID 93, or a functional variant thereof in a sample isolated from a patient, (b) comparing the expression of said polypeptide(s) detected in step (a) with the expression of said polypeptide(s) in a reference library or in a reference sample, (c) identifying said polypeptide(s) which is (are) differentially expressed in the sample isolated from the patient compared to the reference library or the reference sample.
- [030] A method of diagnosing a liver disorder or epithelial cancers comprising the following steps: (a) detecting the expression of at least one polypeptide according to SEQ ID 1 to SEQ ID 93, or functional variants thereof in a sample isolated from a patient, (b) comparing the expression of said polypeptide(s) detected in step (a) with the expression of said polypeptide(s) in a reference library or in a reference sample, (c) identifying said polypeptide(s) which is (are) differentially expressed in the sample isolated from the patient compared to the reference library or the reference sample, and (d) matching said polypeptide(s) identified in step (c) with said polypeptide(s) differentially expressed in a pathologic reference sample or pathologic reference library, wherein the matched polypeptide(s) are indicative of the patient suffering from a liver disorder, or an epithelial cancer.
- [031] The method according to claim 30, wherein at least 2 polypeptides are identified.
- [032] The method according to claim 30 or 31, wherein the polypeptides are detected by a method selected from the group consisting of gel electrophoresis, chromatographic techniques, immunoblot analysis, immunohistochemistry, enzyme based immunoassay, surface plasmon resonance, HPLC, mass spectroscopy, immunohistochemistry, and enzyme based immunoassay.
- [033] The method according to one of claims 30 to 32, wherein the polypeptides are compared by a method selected from the group consisting of two dimensional gel electrophoresis, chromatographic separation techniques, immunoblot analysis, surface plasmon resonance, immunohistochemistry, and enzyme based immunoassay.
- [034] The method according to one of claims 30 to 33, wherein the sample isolated from a patient is selected from the group consisting of liver tissue, a liver cell, tissue from another organ subject to cancerous transformation, a cell from this organ, blood, serum, plasma, ascitic fluid, pleural effusion, cerebral spinal fluid, saliva, urine, semen, and feces.

- [035] The method according to one of claims 30 to 34, wherein the reference sample is isolated is from a source selected from a non-diseased sample of the same patient and a non-diseased sample from another subject.
- [036] The method according to one of claims 30 to 35 wherein the reference sample is selected from the group consisting of liver tissue, a liver cell, blood, serum, plasma, ascitic fluid, pleural effusion, cerebral spinal fluid, saliva, urine, semen, and feces.
- [037] The method according to one of claims 30 to 36, wherein the reference library is an expression library or a data base comprising clones or data on liver disorder-specific expression of said polypeptide(s) of step (a).
- [038] The method according to claim 30 to 37, wherein the pathologic reference sample is isolated from a source selected from a diseased sample from another patient suffering from a liver disorder and epithelial cancer.
- [039] The method according to claim 30 to 38, wherein the pathologic reference library is a data base comprising data on differential expression of said polypeptide(s) of step (a) in samples isolated from another patient, suffering from a liver disorder or epithelial cancer, relative to control expression in a reference sample or reference library.
- [040] The method according to claim 30 to 39, wherein the liver disorders is a disorder selected from the group consisting of hepatocellular carcinoma, benign liver neoplasms, and cirrhosis.
- [041] The method according to one of claims 30 to 40, wherein the epithelial cancer is an adenocarcinoma of an organ selected from the group consisting of the lung, the stomach, the kidney, the colon, the prostate, the skin, and the breast.
- [042] A method of preventing a patient from developing a liver disorder or an epithelial cancer, wherein at least one component selected from the group consisting of a polypeptide according to the sequence of SEQ ID 1 to SEQ ID 93, a functional variant thereof, a nucleic acid encoding one of the aforementioned polypeptides, a variant of one of the aforementioned nucleic acids, a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, a nucleic acid which is a non-functional mutant variant of one of the aforementioned nucleic acids, a vector comprising one of the aforementioned nucleic acids, or a variant thereof, a cell comprising one of the aforementioned nucleic acids, or a variant thereof, and a cell comprising the aforementioned vector, is administered to the patient in need of such preventive treatment in a therapeutically effective amount.
- [043] A method of identifying a pharmacologically active compound comprising the following steps: (a) providing at least one polypeptide according to the SEQ ID 1

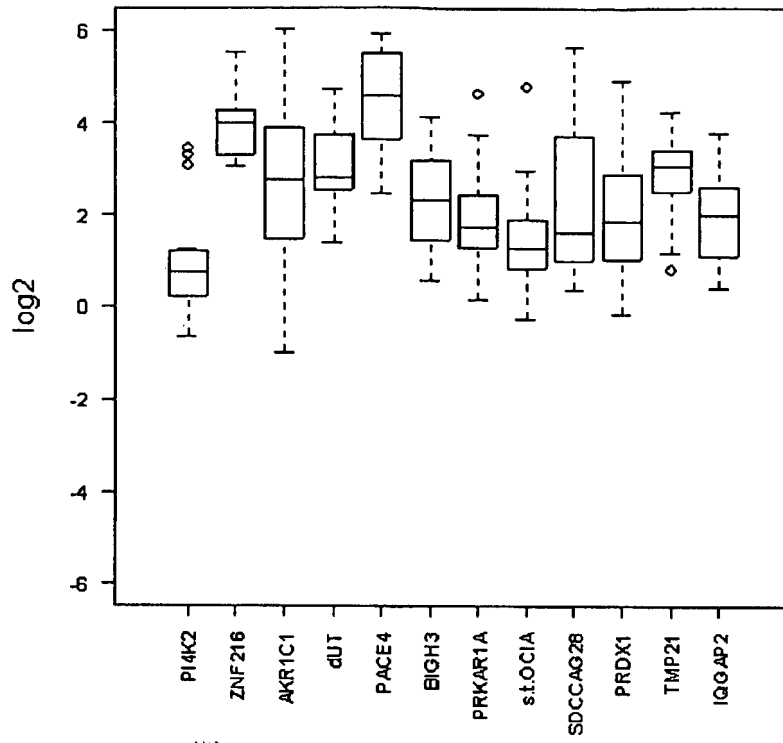
to 93, or a functional variant thereof, (b) contacting said polypeptide(s) with (a) compound(s) suspected to be pharmacologically active, (c) assaying the interaction of said polypeptide(s) of step (a) with said compound(s) suspected to be pharmacologically active, (d) identifying said compound(s) suspected to be pharmacologically active which directly or indirectly interact with said polypeptide(s) of step (a).

- [044] The method according to claim 43, wherein said polypeptide(s) of step (a) is (are) attached to a column, said polypeptide(s) is (are) attached to an array, contained in an electrophoresis gel, attached to a membrane, or is (are) expressed by a cell.
- [045] The method according to claim 43 or 44, wherein the interaction is assayed enzyme or fluorescence based cellular reporter methods.
- [046] The method according to claim 43 or 44, wherein the interaction is assayed by surface plasmon resonance, HPLC, or mass spectroscopy.
- [047] The method according to claim 43, wherein the direct or indirect functional interaction of step (d) is selected from the group consisting of induction of the expression of said polypeptide(s) of step (a), inhibition of said polypeptide(s), activation of the function of said polypeptide(s), and inhibition of the function of said polypeptide(s).
- [048] An isolated polypeptide comprising a sequence according to SEQ ID 32, or a functional variant thereof.
- [049] A fusion protein comprising a polypeptide according to claim 48.
- [050] An isolated nucleic acid, or a variant thereof encoding the polypeptide according to claim 48.
- [051] The nucleic acid according to claim 50, wherein the nucleic acid is a single-stranded or double-stranded RNA.
- [052] The nucleic acid according to claim 50, wherein the nucleic acid comprises a nucleic acid according to SEQ ID 125.
- [053] A vector comprising a nucleic acid according to claim 50.
- [054] The vector according to claim 53, wherein the vector is selected from the group consisting of a knock-out gene construct, a plasmid, a shuttle vector, a phagemid, a cosmid, a viral vector, and an expression vector.
- [055] A cell comprising the nucleic acid according to claim 50.
- [056] A cell comprising the vector according to claim 53.
- [057] The cell according to claim 56, wherein the cell is a transgenic embryonic non-human stem cell.
- [058] A transgenic non-human mammal comprising the nucleic acid according to claim 50.

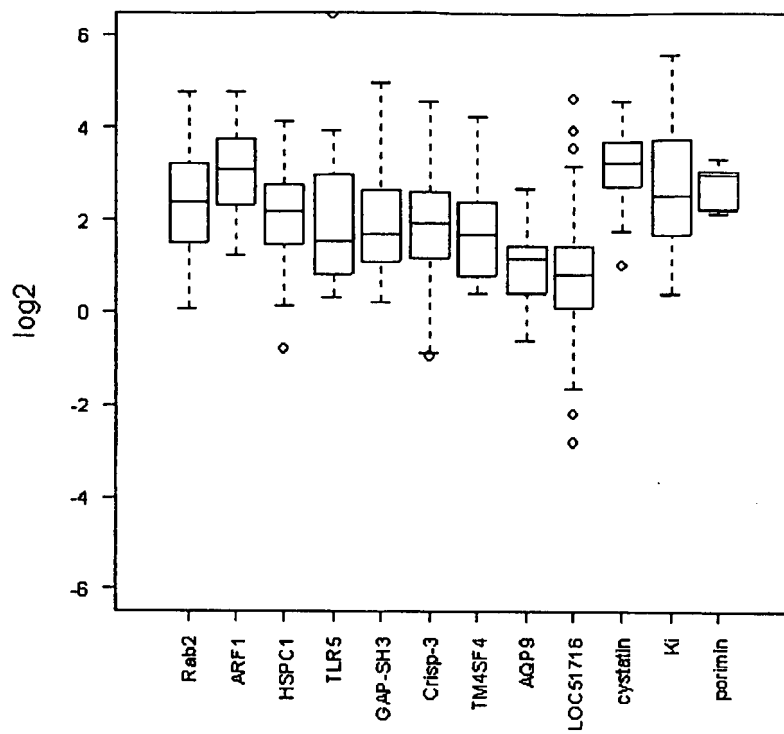


- [059] An antibody or an antibody fragment thereof, wherein the antibody is directed against the polypeptide according to claim 48 or against the nucleic acid according to claim 50.
- [060] A nucleic acid which comprises a nucleic acid having a sequence complementary to the nucleic acid according to claim 50 or a non-functional mutant variant of the nucleic acid according to claim 50.
- [061] The nucleic acid according to claim 60, wherein the nucleic acid having a complementary sequence is an antisense molecule or an RNA interference molecule.
- [062] A vector comprising the nucleic acid according to claim 60.
- [063] The vector according to claim 62, wherein the vector is selected from the group consisting of a plasmid, a shuttle vector, a phagemid, a cosmid, a viral vector, and an expression vector.
- [064] A cell comprising the nucleic acid according to claim 62.
- [065] A cell comprising the vector according to claim 64.

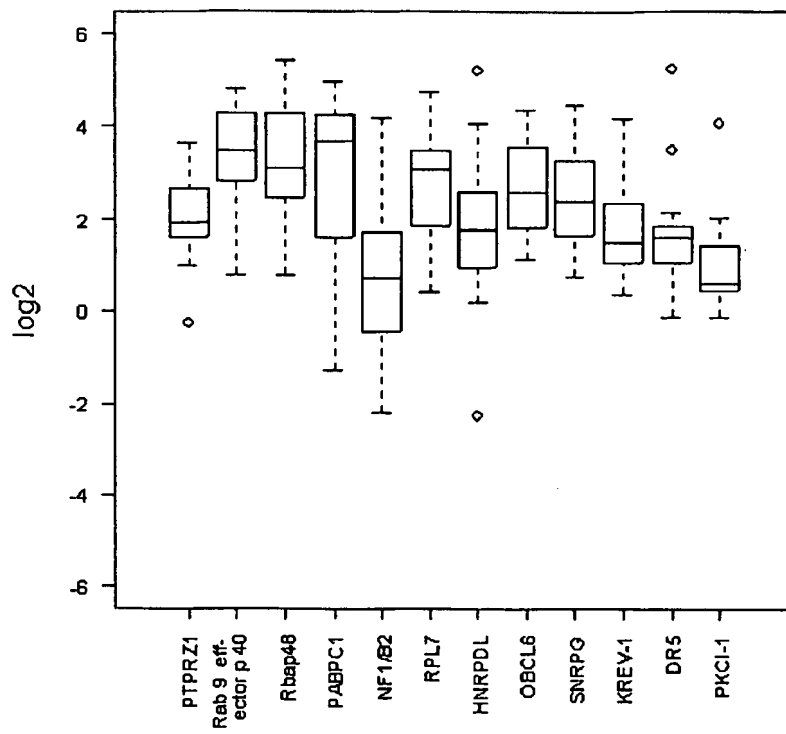
[Fig. 001]



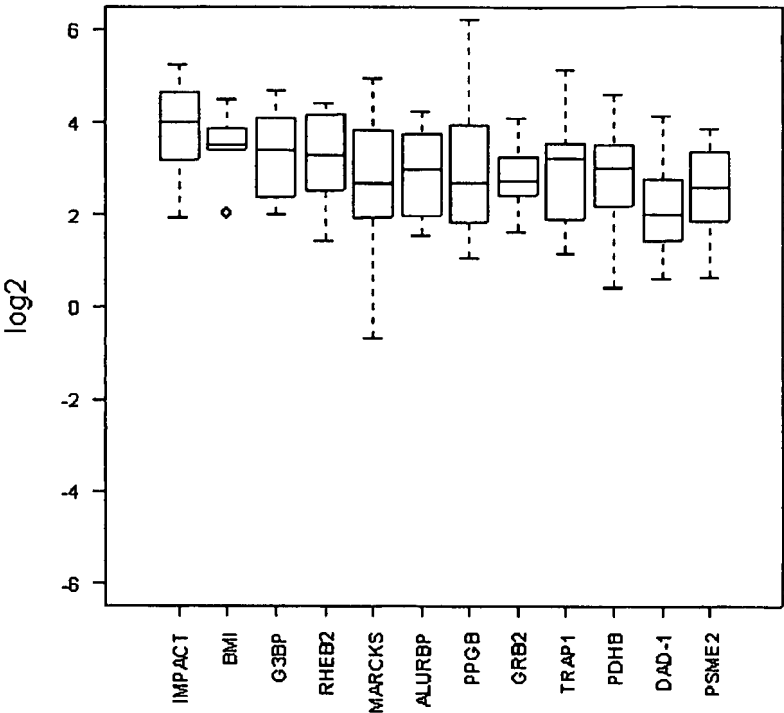
[Fig. 002]



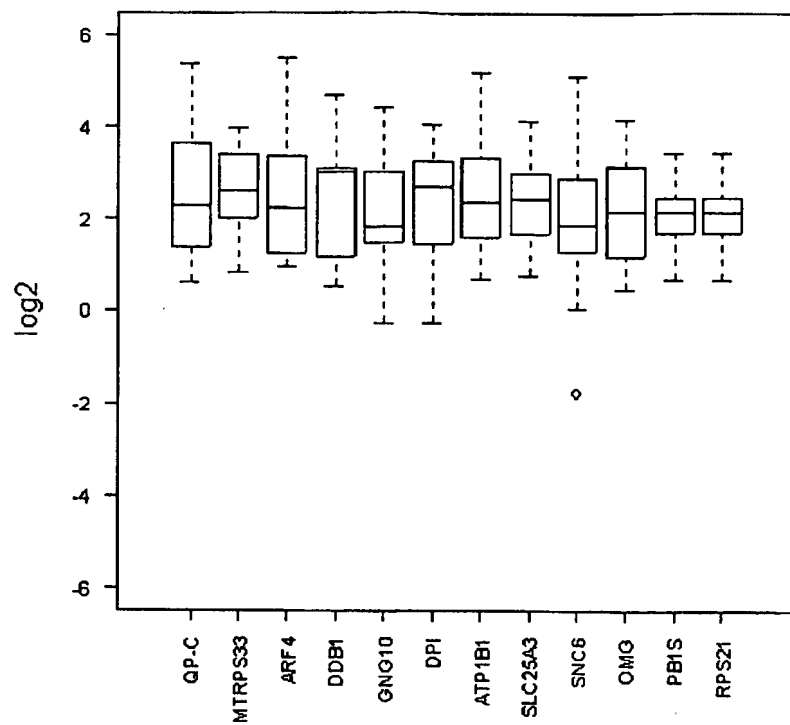
[Fig. 003]



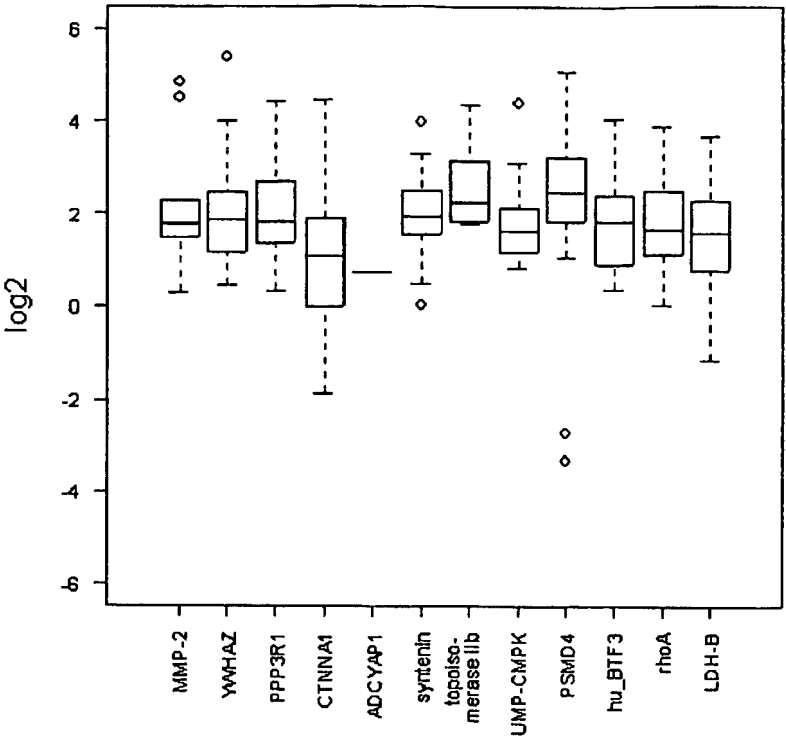
[Fig. 004]



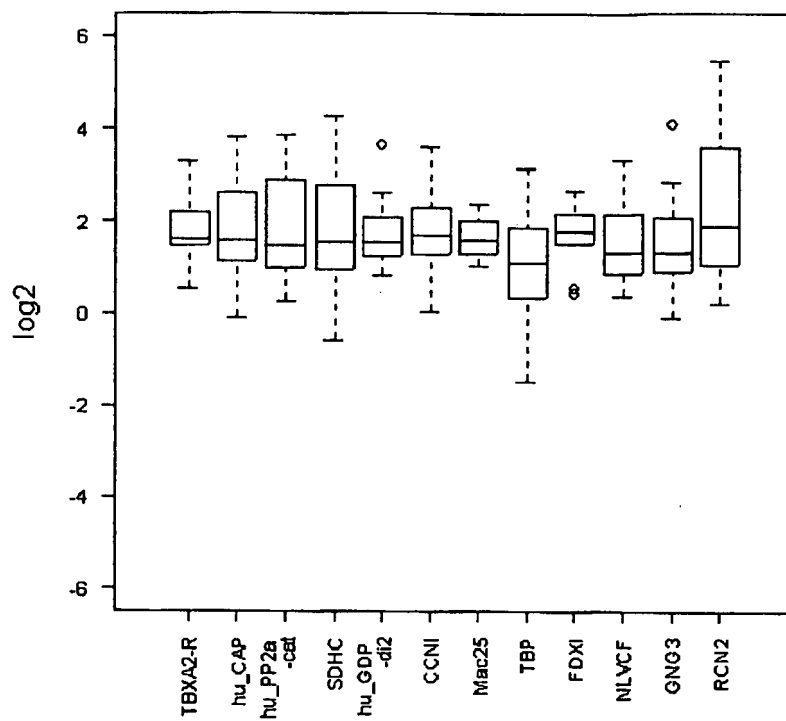
[Fig. 005]



[Fig. 006]

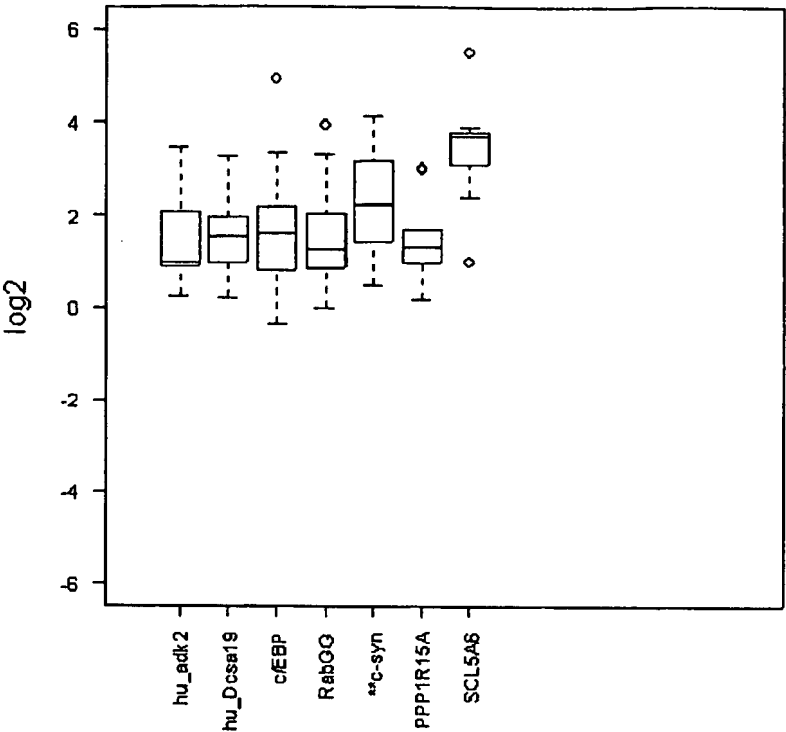


[Fig. 007]

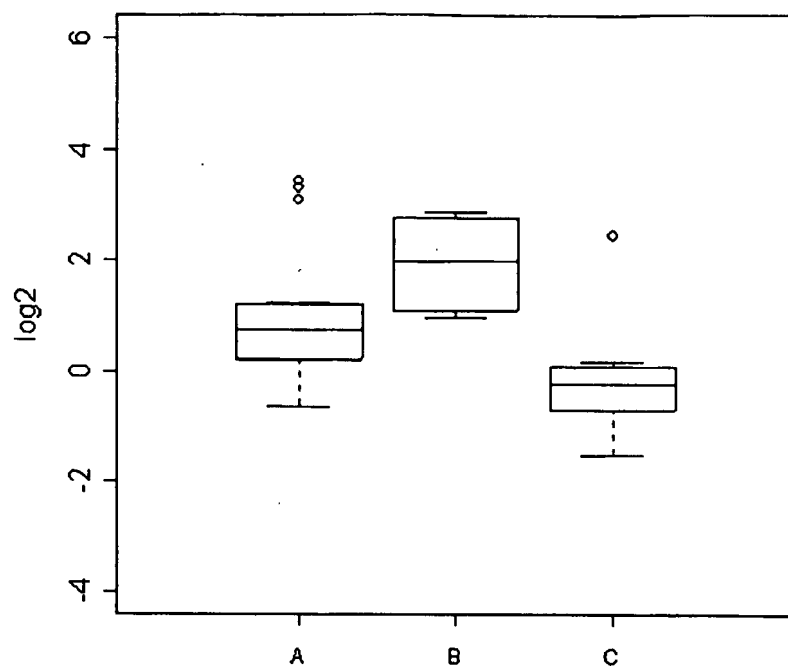




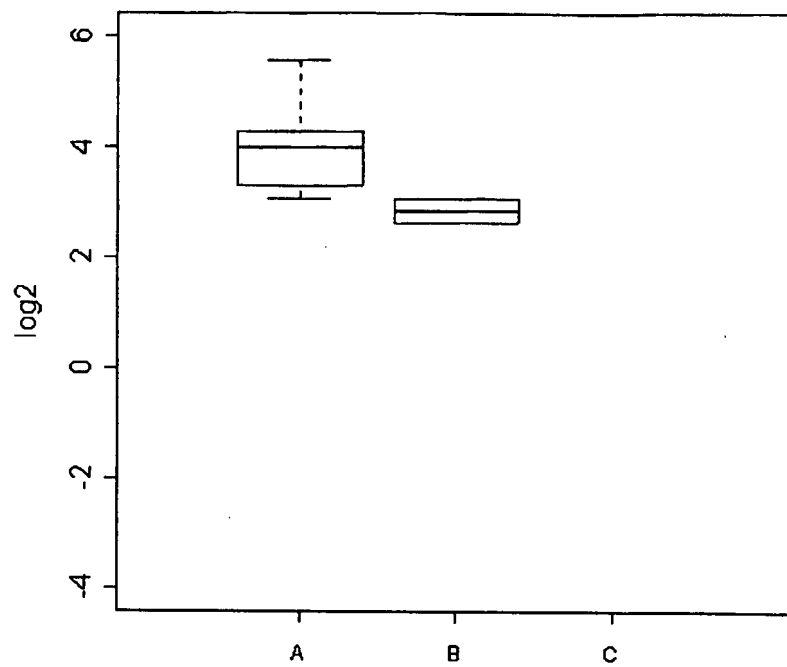
[Fig. 008]



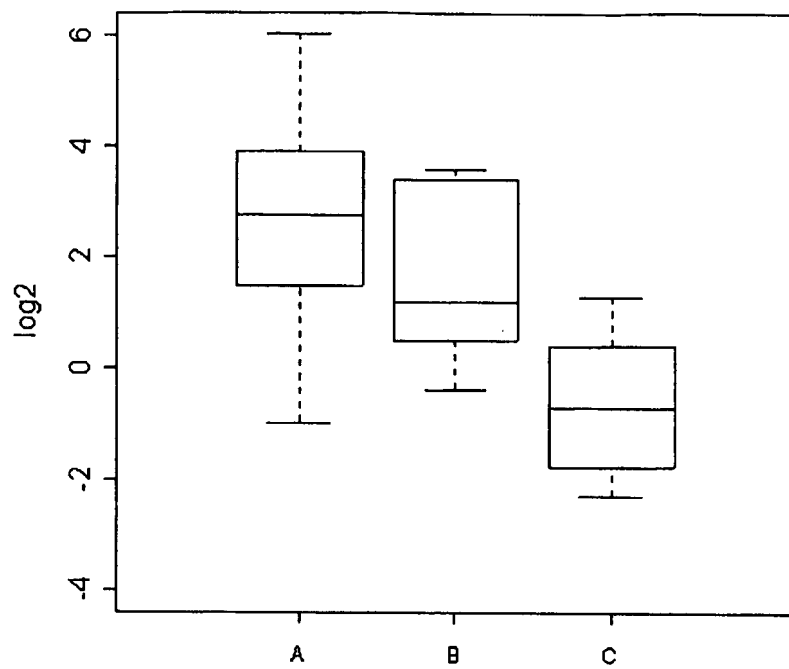
[Fig. 009]

**PI4K2**

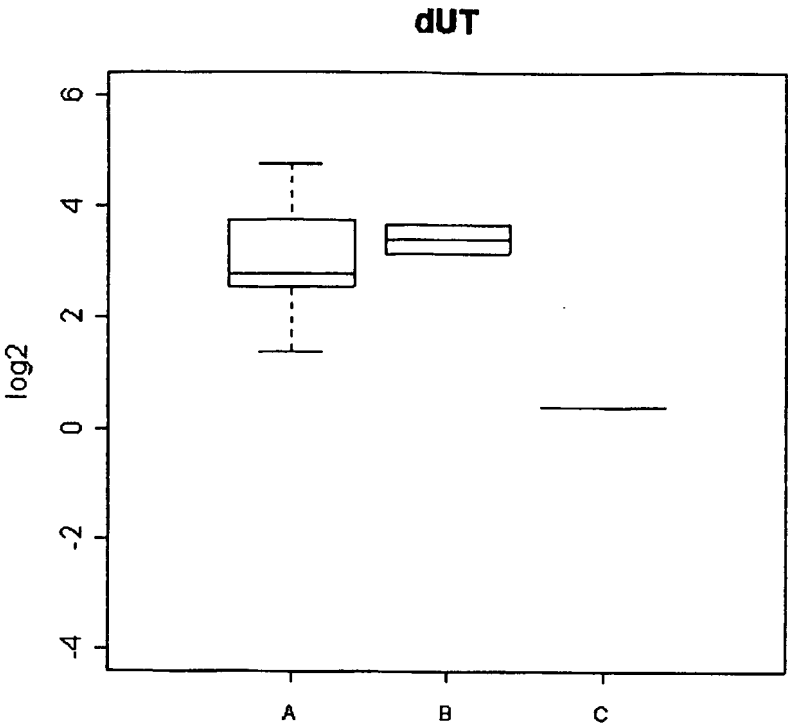
[Fig. 010]

**ZNF216**

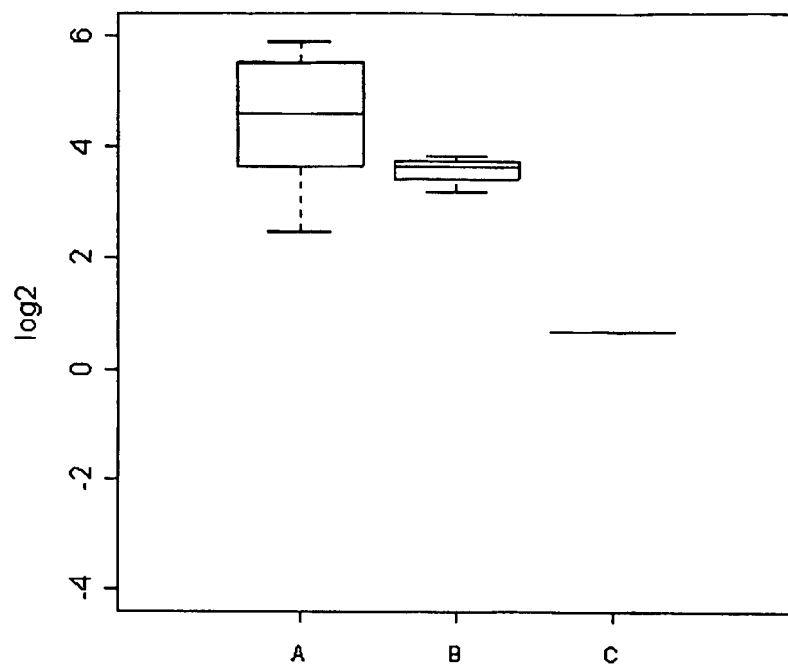
[Fig. 011]

**AKR1C1**

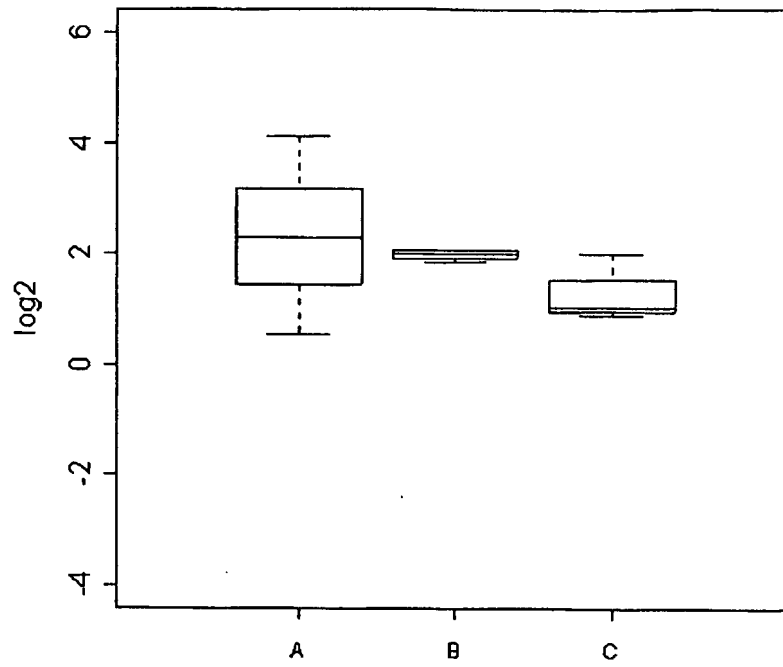
[Fig. 012]



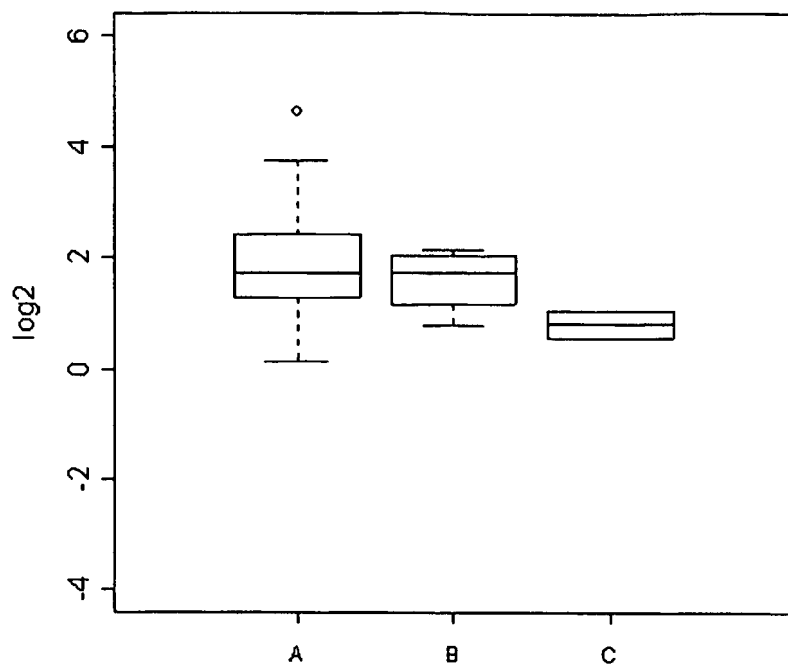
[Fig. 013]

**PACE4**

[Fig. 014]

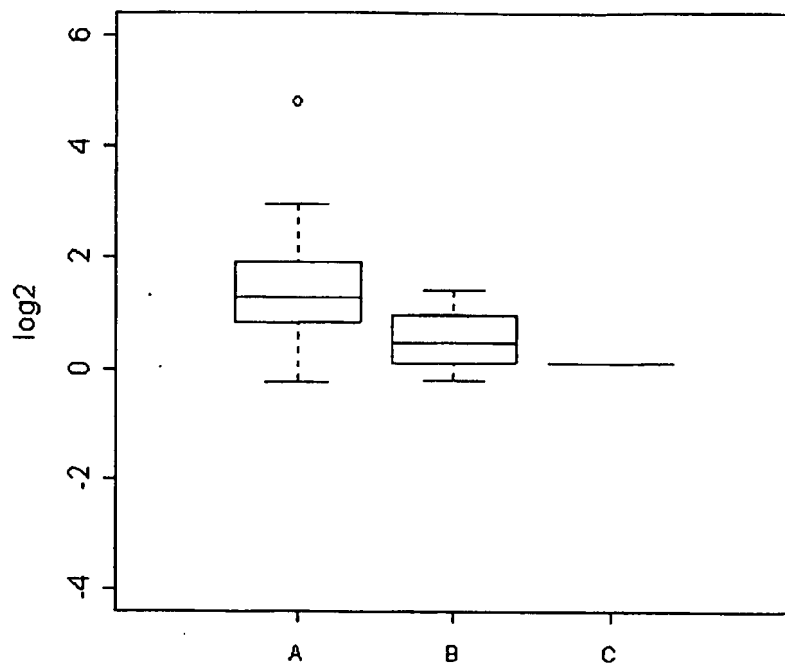
**BIGH3**

[Fig. 015]

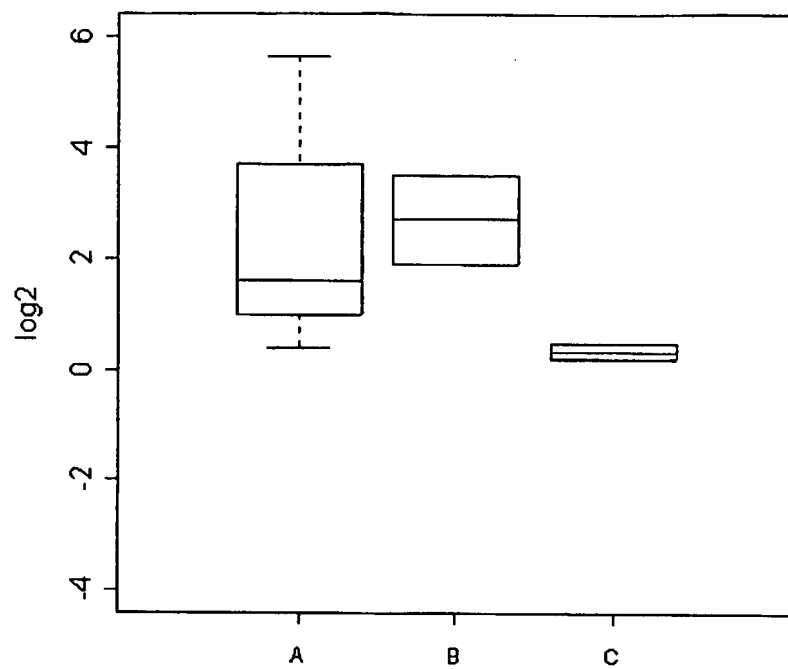
**PRK1R1A**



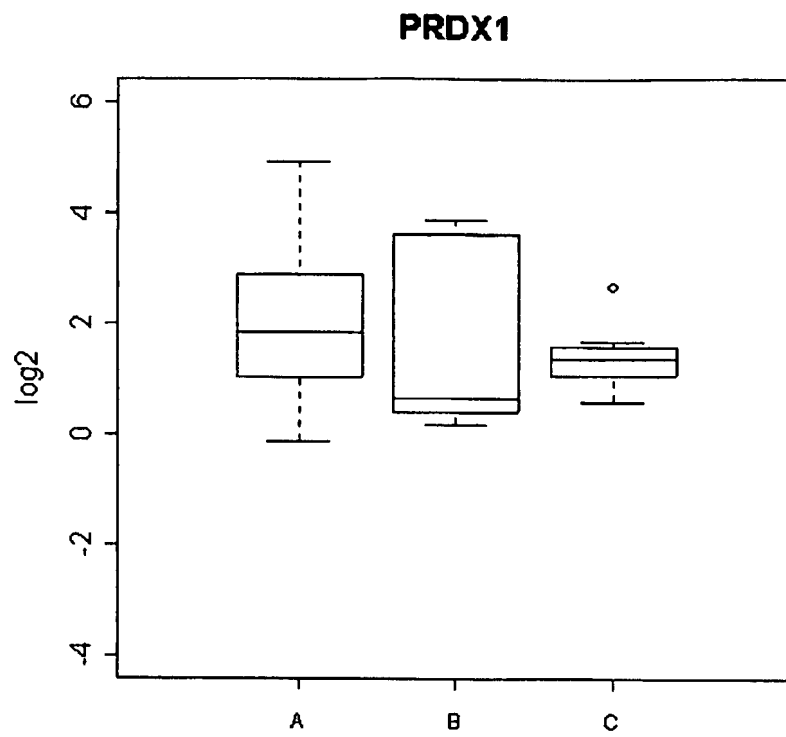
[Fig. 016]

**s.t.OClA**

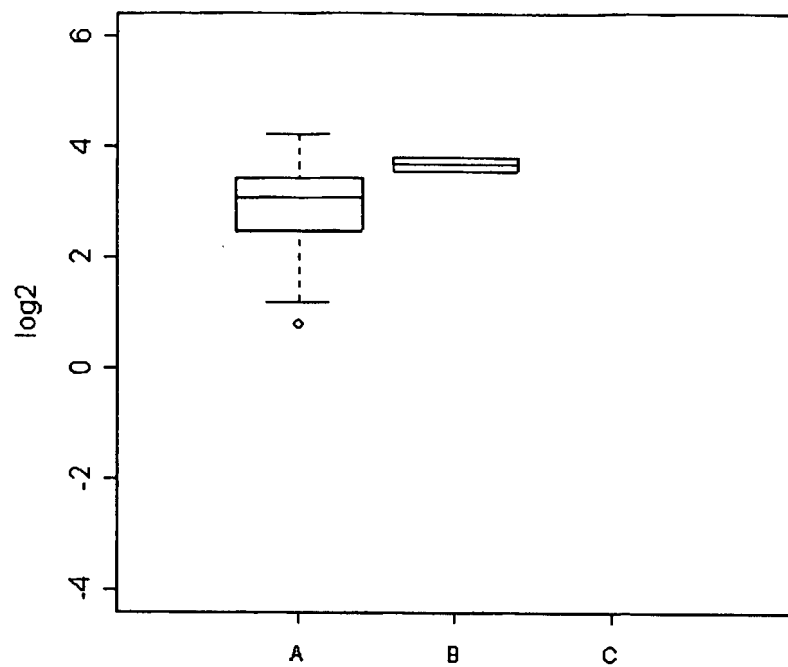
[Fig. 017]

**SDCCAG28**

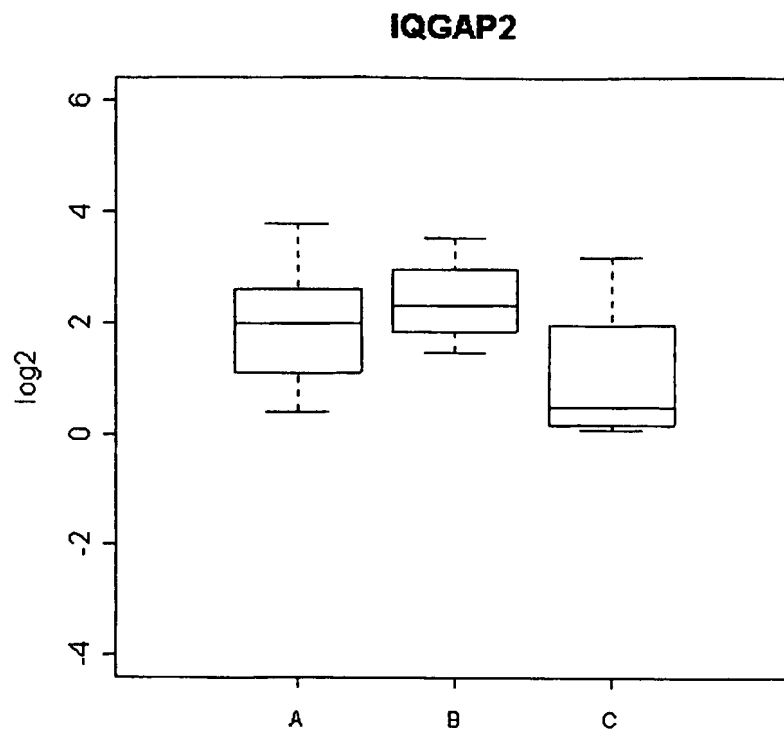
[Fig. 018]



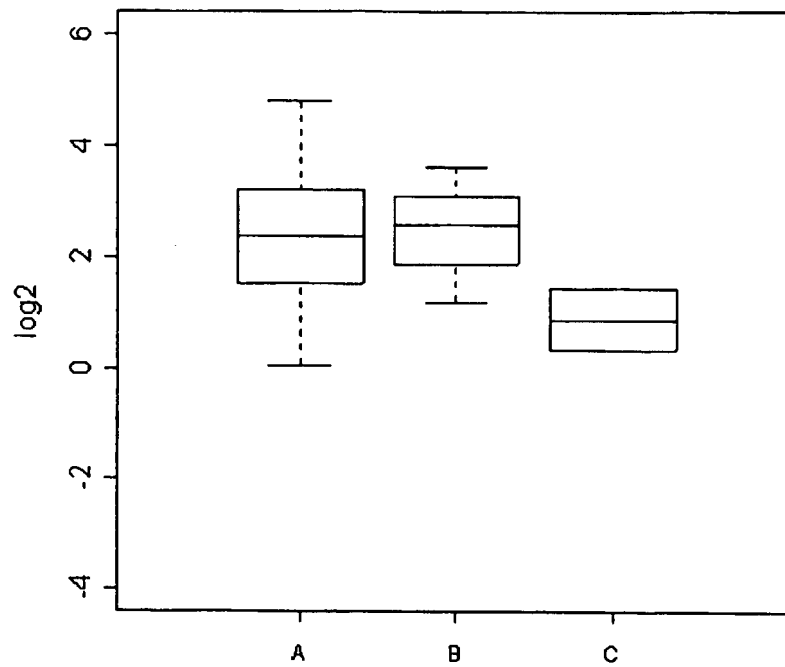
[Fig. 019]

**TMP21**

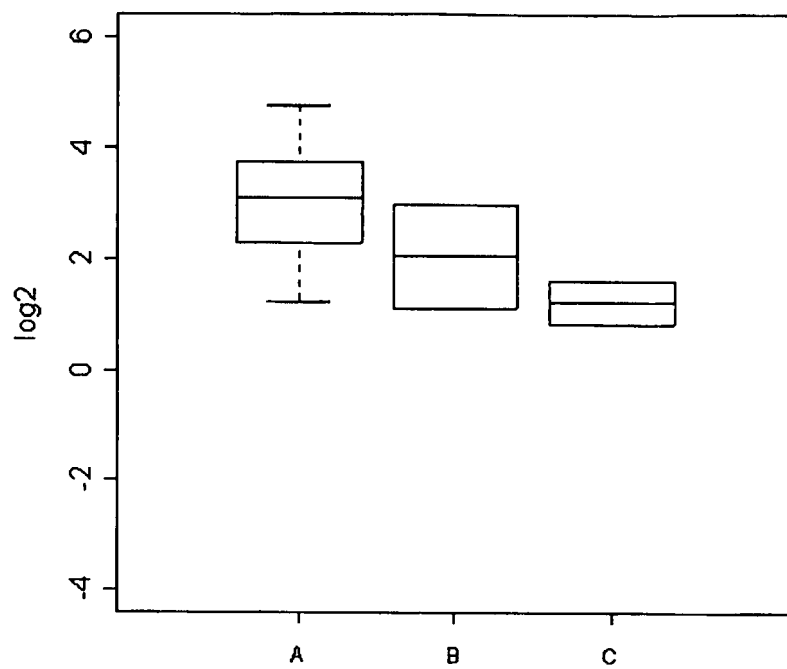
[Fig. 020]



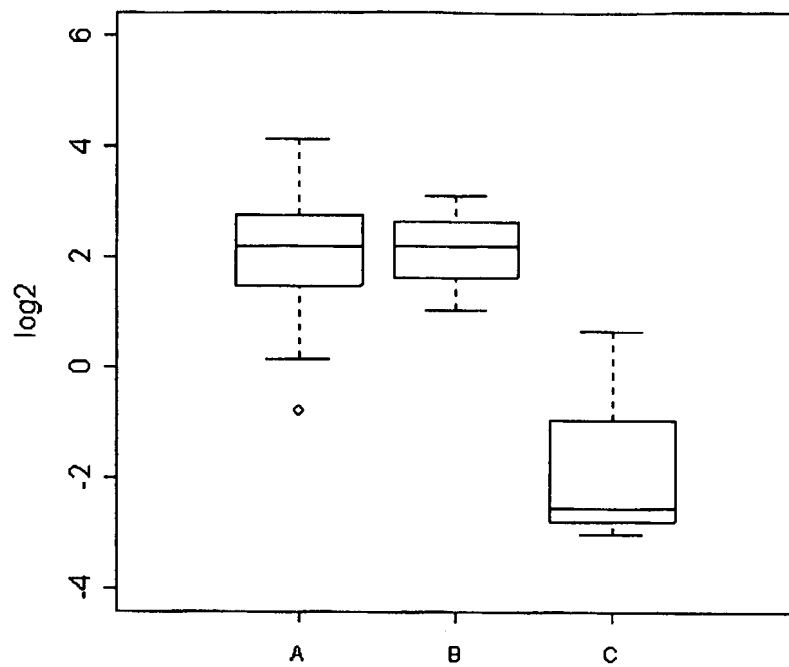
[Fig. 021]

**Rab2**

[Fig. 022]

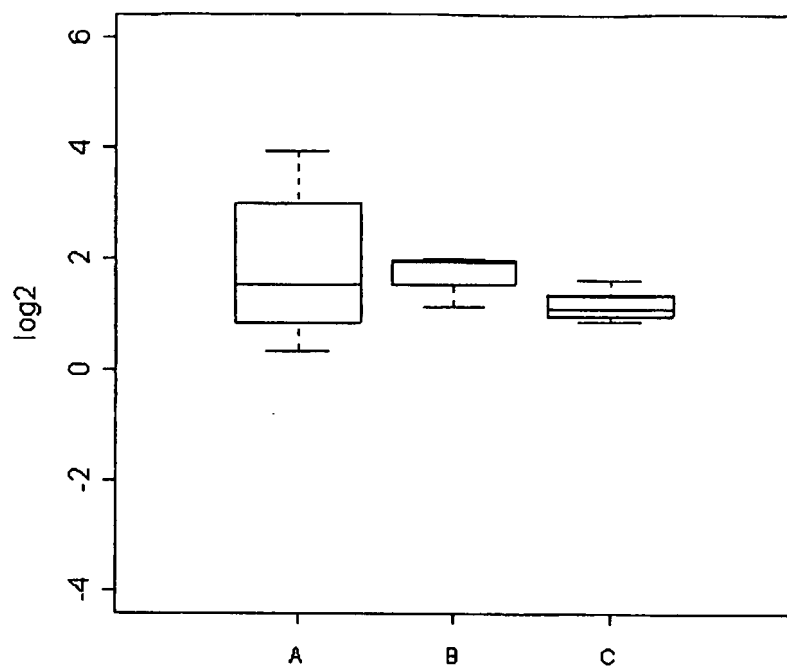
**ARF1**

[Fig. 023]

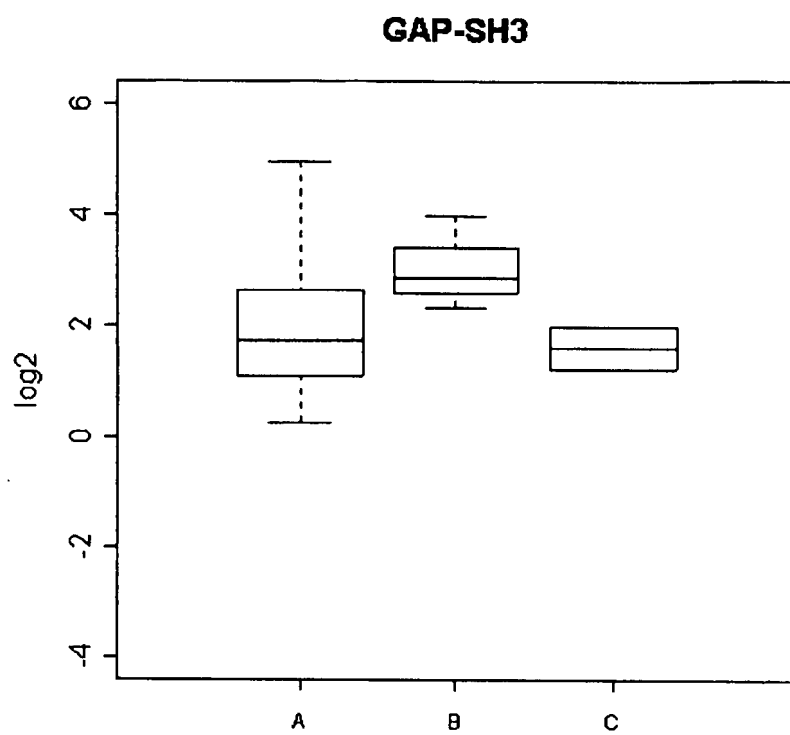
**HSPC1**



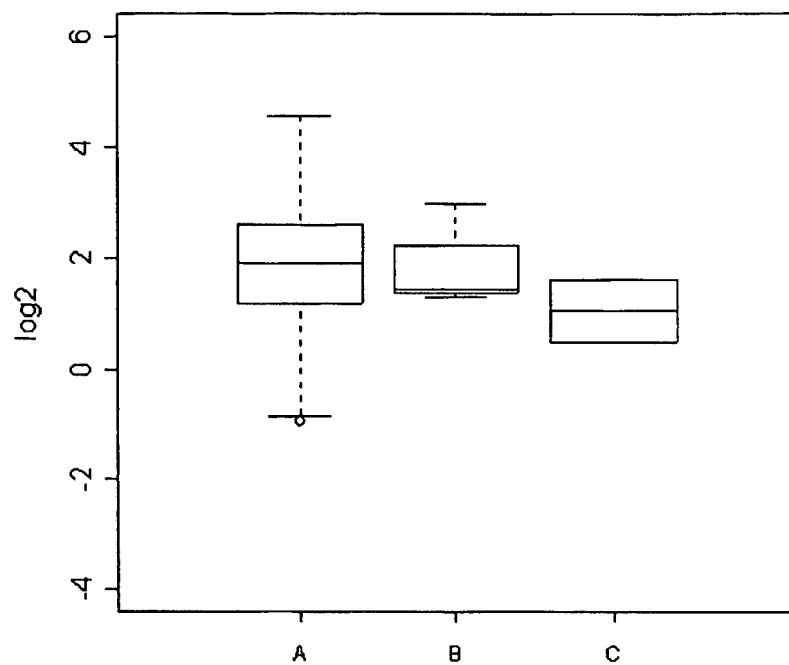
[Fig. 024]

**TLR5**

[Fig. 025]

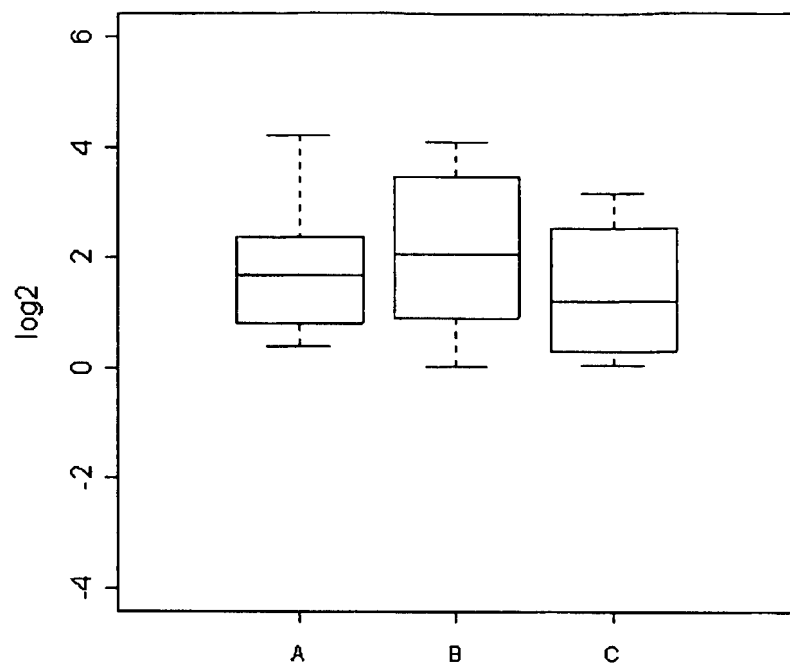


[Fig. 026]

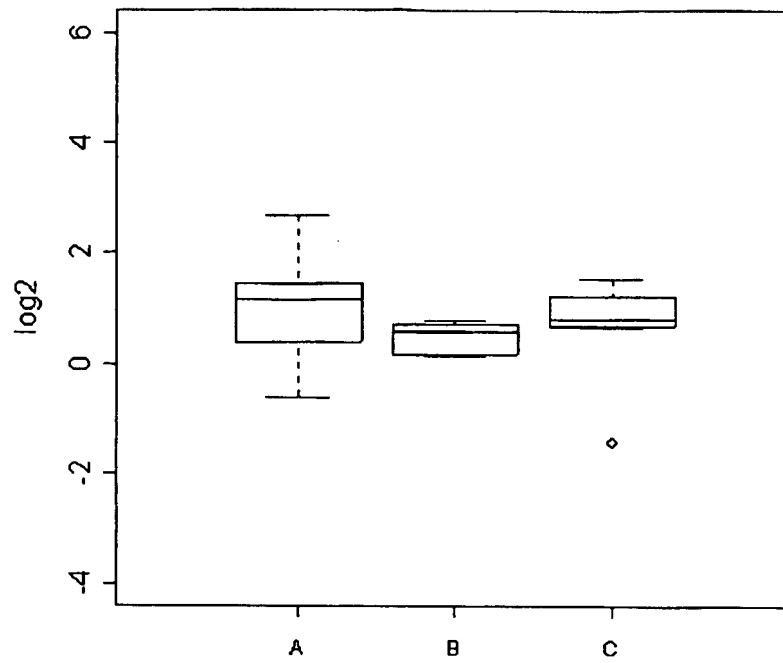
**Crisp-3**

27/106

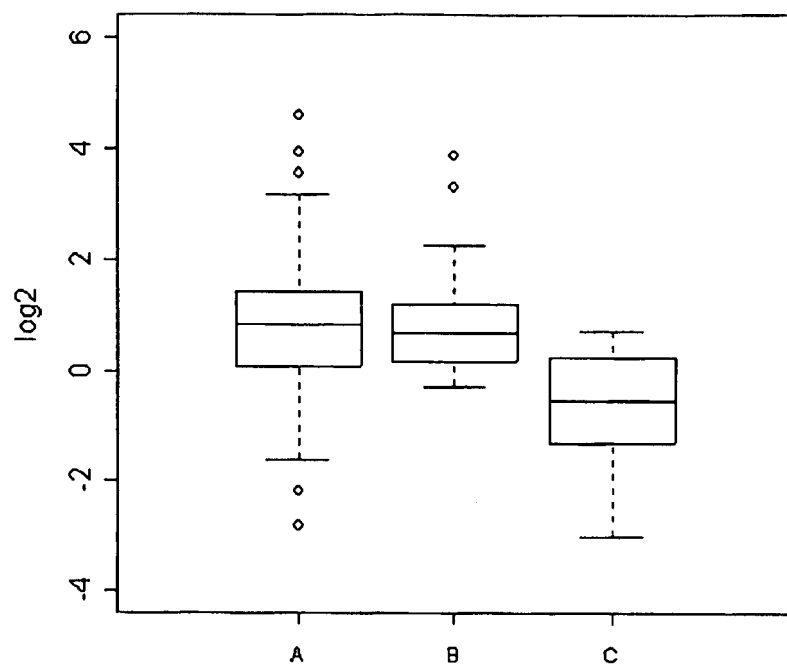
[Fig. 027]

**TM4SF4**

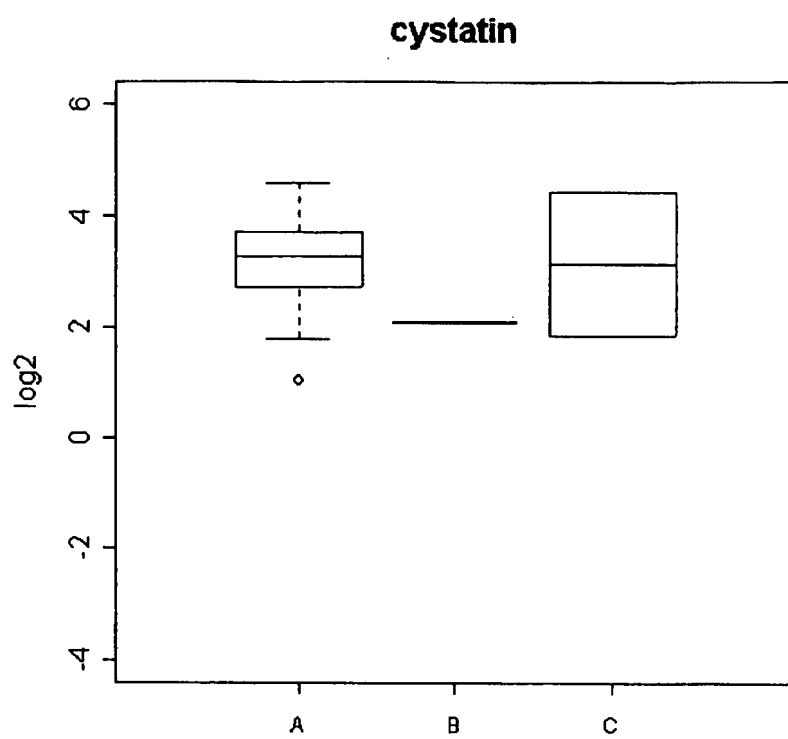
[Fig. 028]

**AQP9**

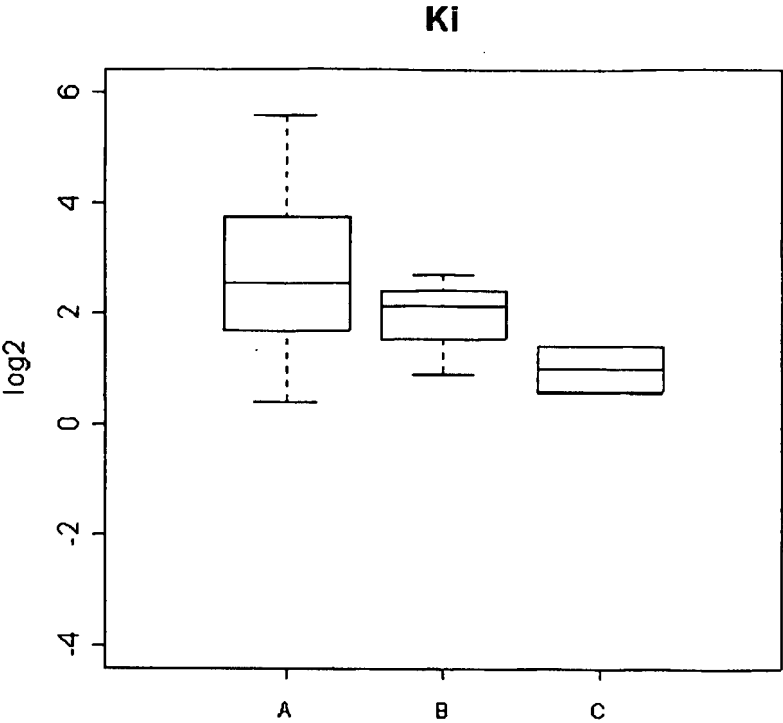
[Fig. 029]

**LOC51716**

[Fig. 030]

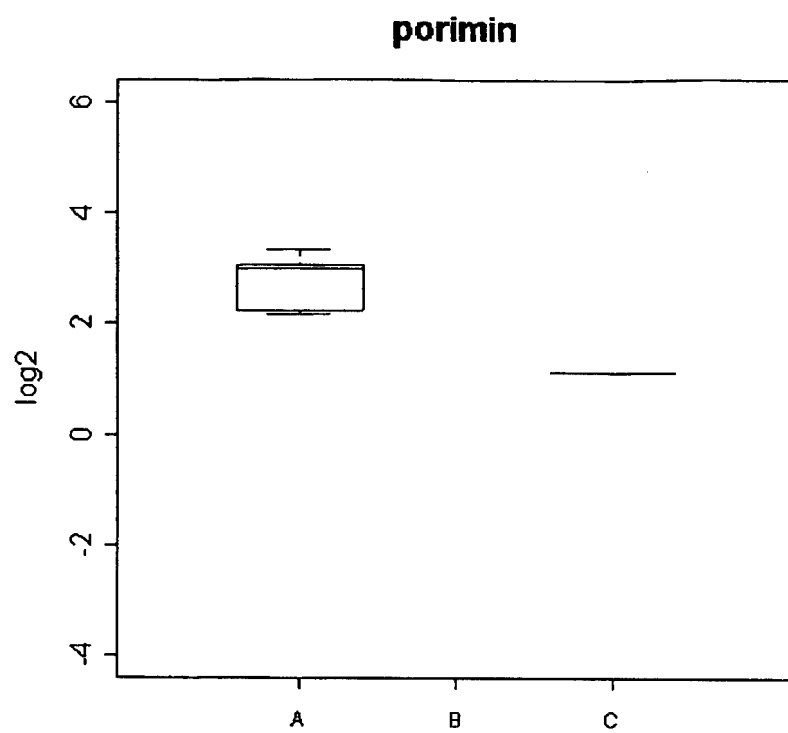


[Fig. 031]

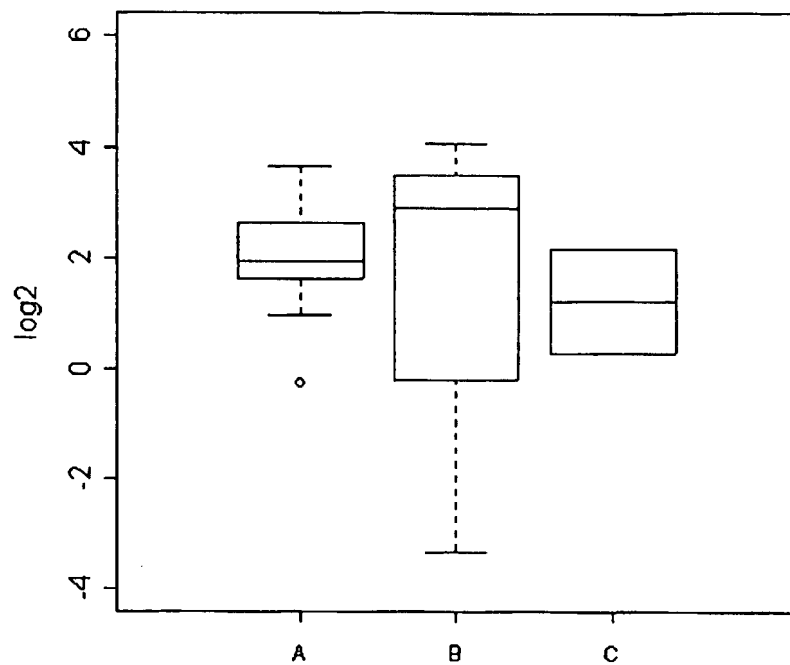




[Fig. 032]

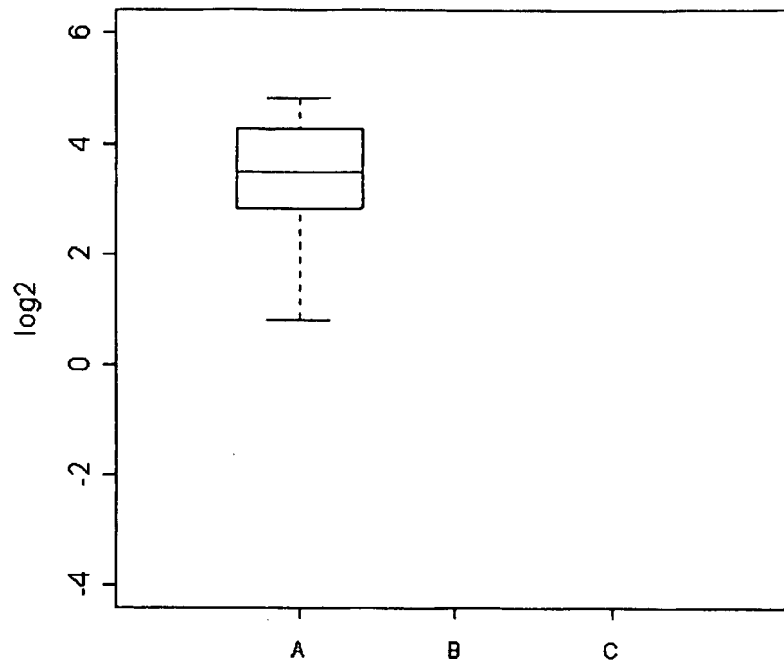


[Fig. 033]

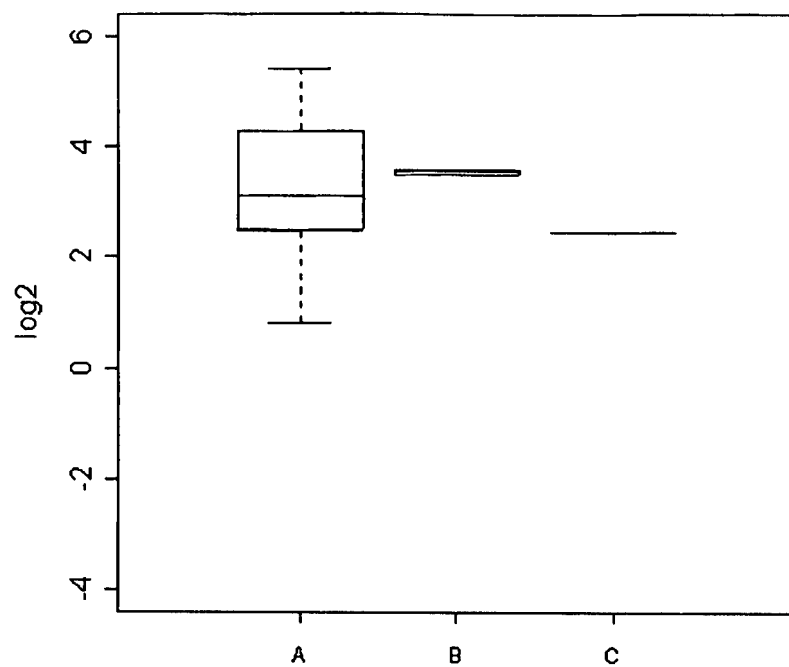
**PTPRZ1**

[Fig. 034]

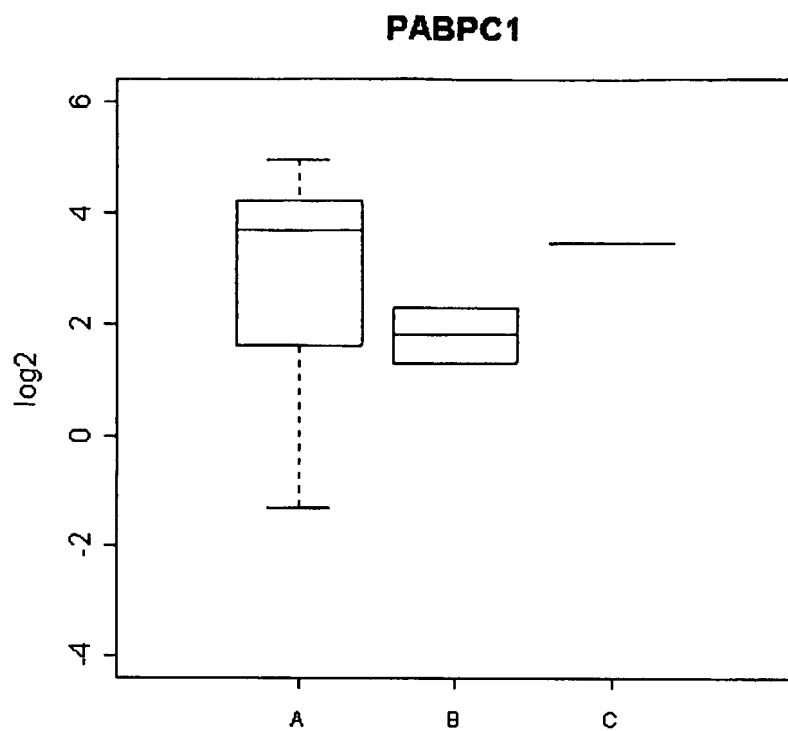
**Rab9 effector of p40**



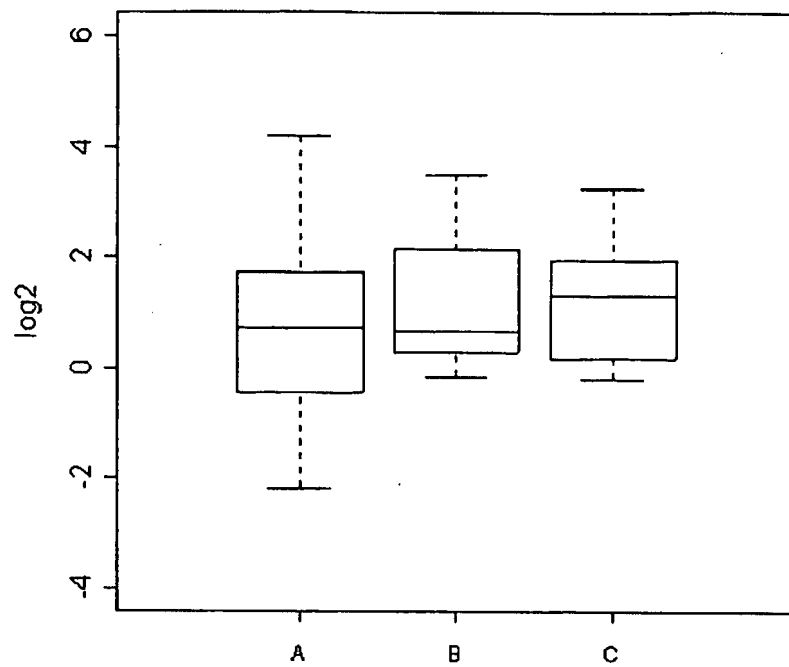
[Fig. 035]

**Rbap48**

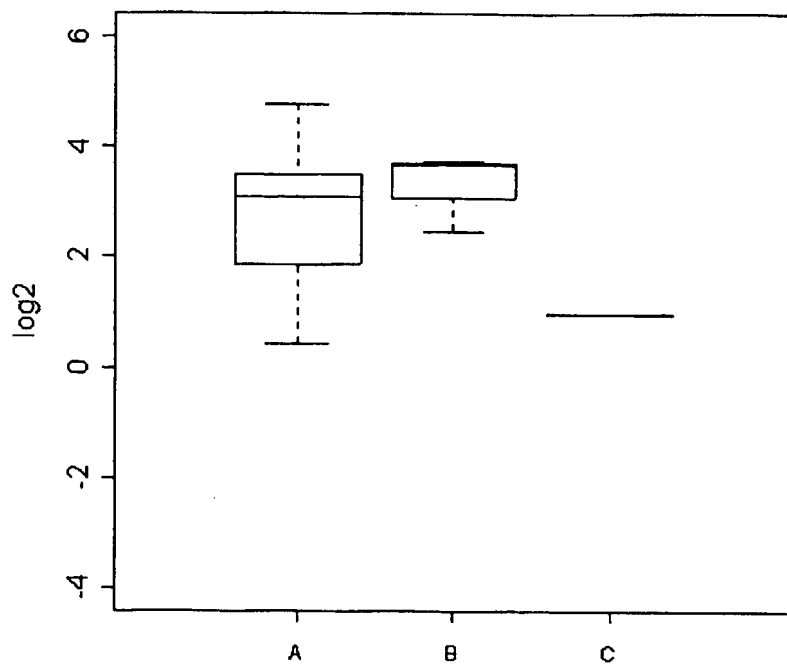
[Fig. 036]



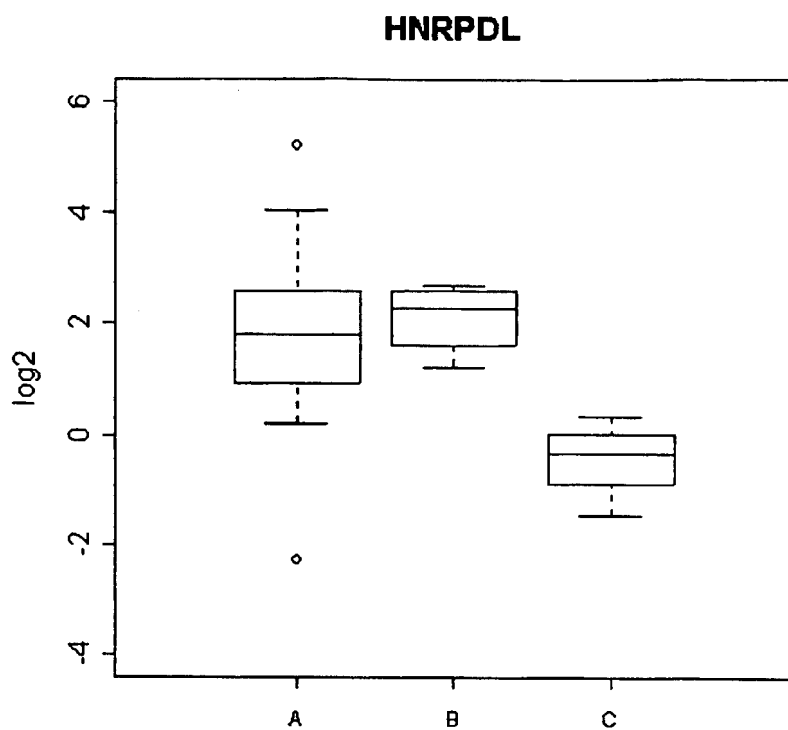
[Fig. 037]

**NF1/B2**

[Fig. 038]

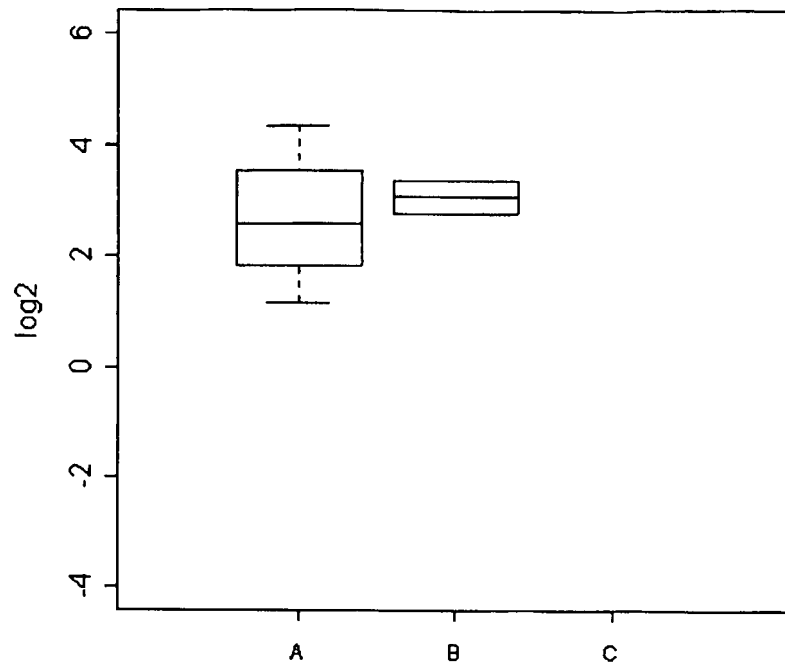
**RPL7**

[Fig. 039]

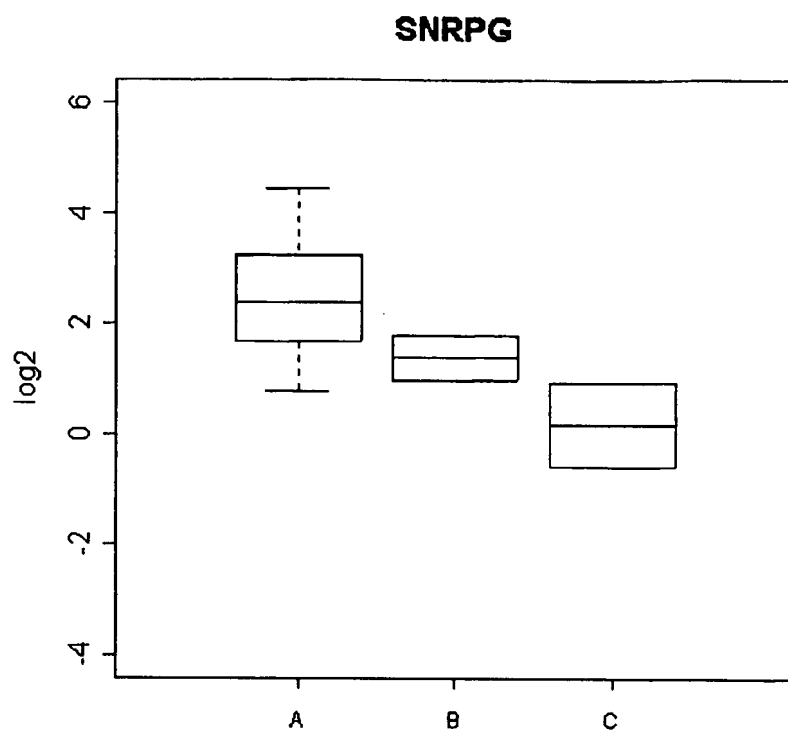




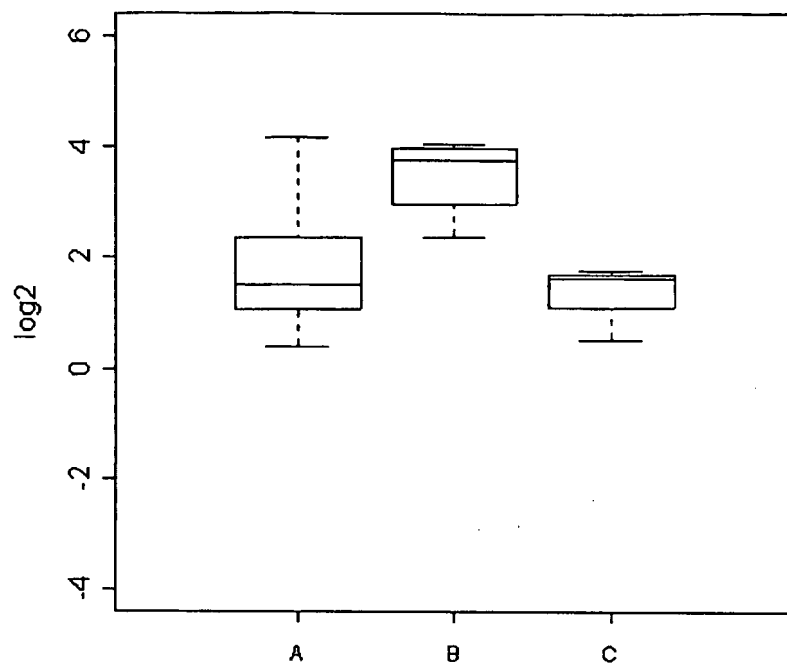
[Fig. 040]

**OBCL6**

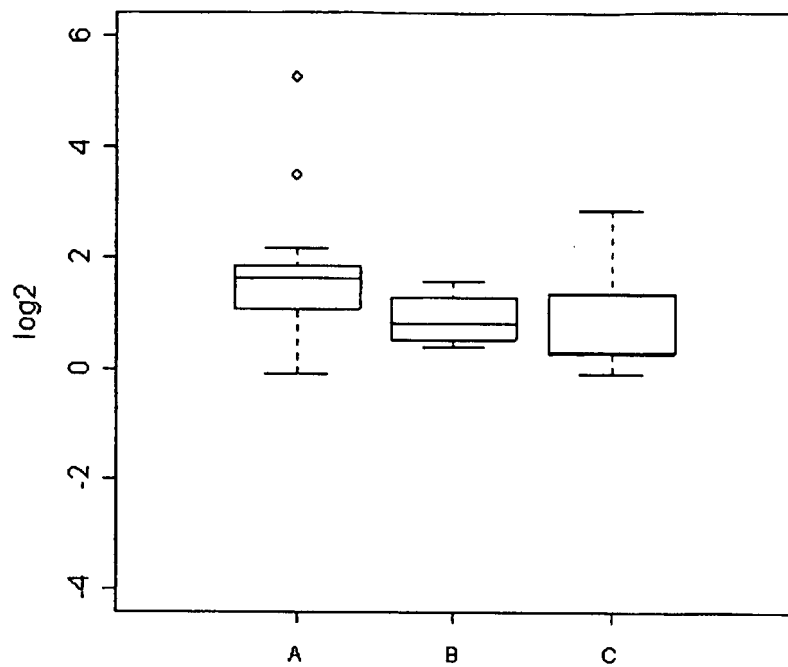
[Fig. 041]



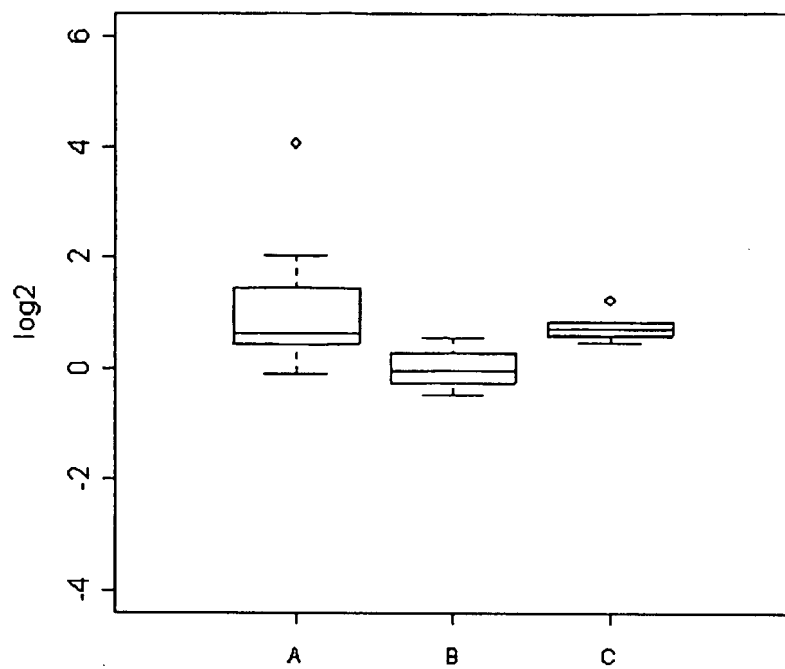
[Fig. 042]

**KREV-1**

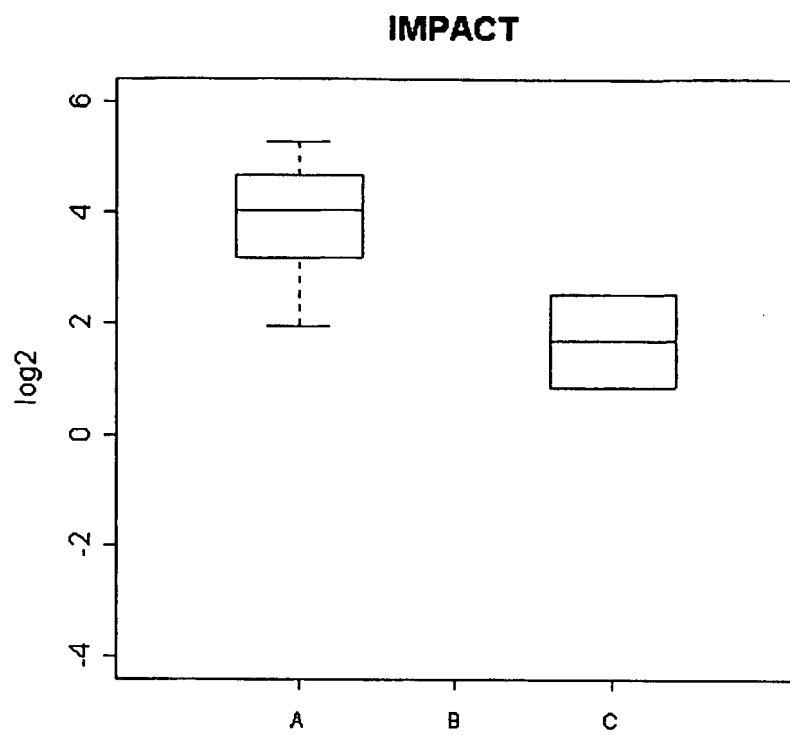
[Fig. 043]

**DR5**

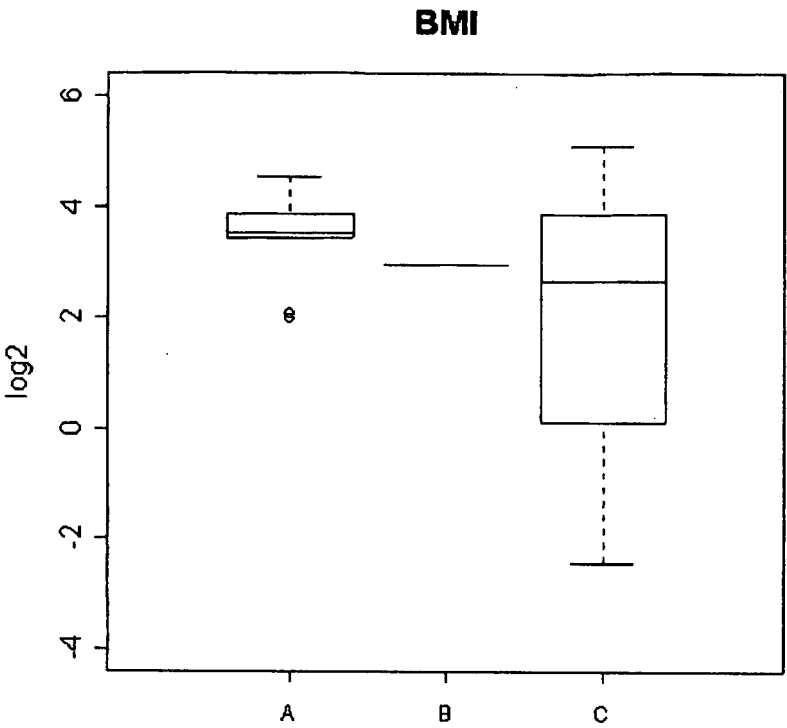
[Fig. 044]

**PKCI-1**

[Fig. 045]

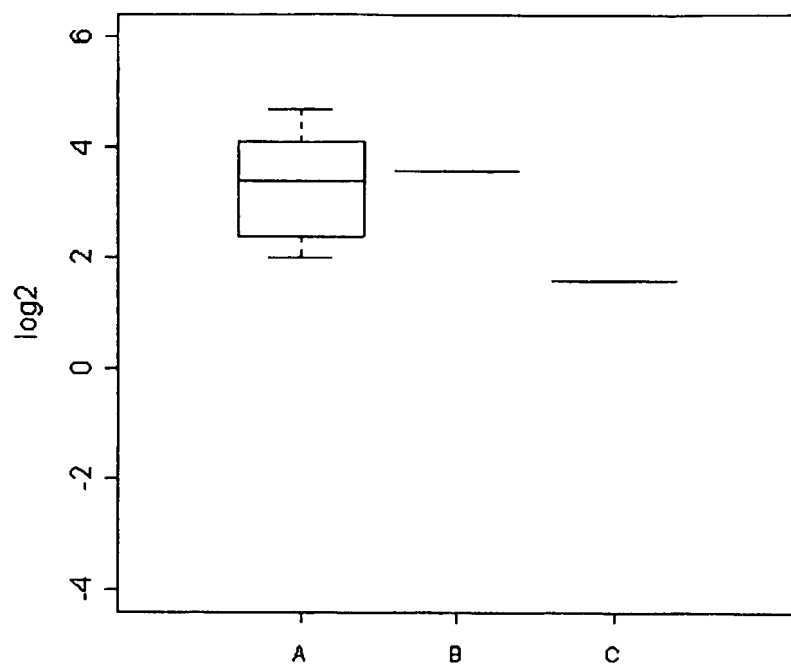


[Fig. 046]



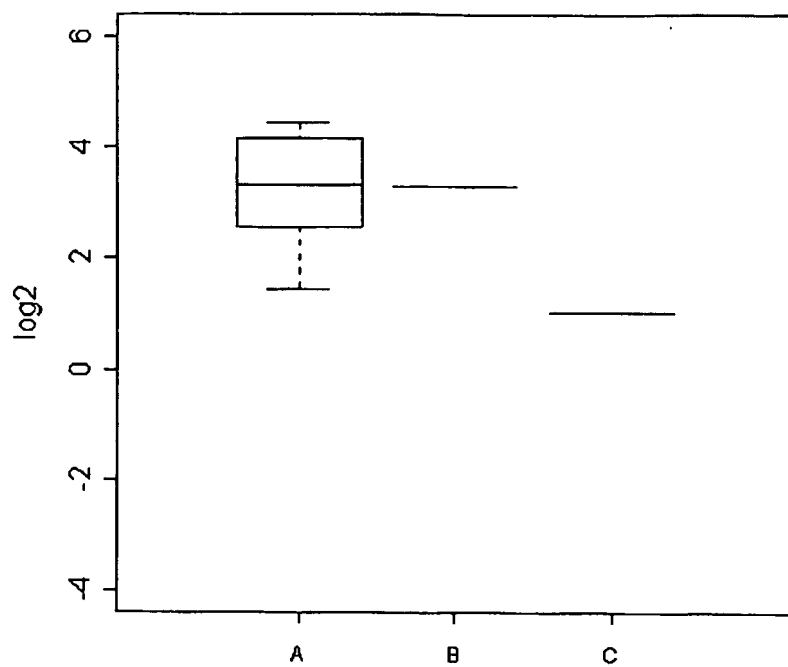
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[Fig. 047]

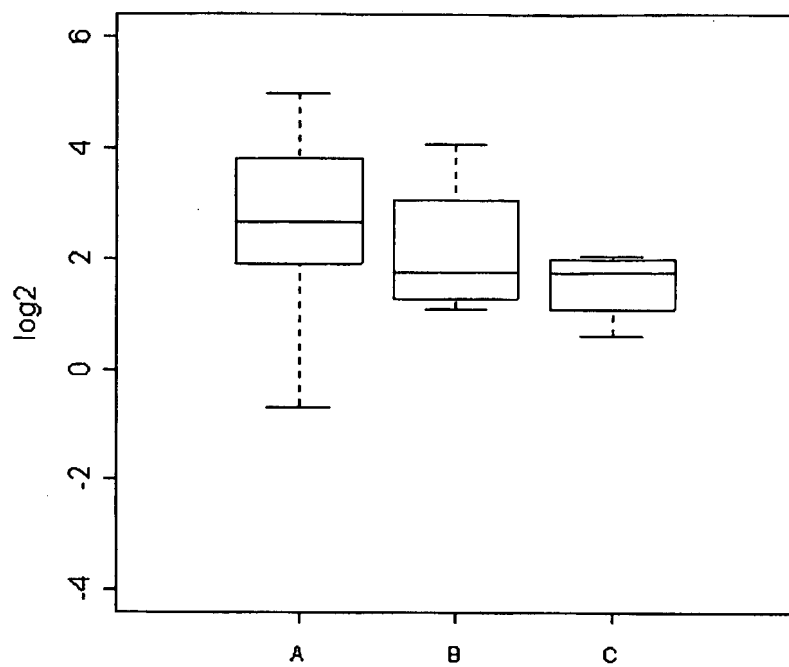
**G3BP**



[Fig. 048]

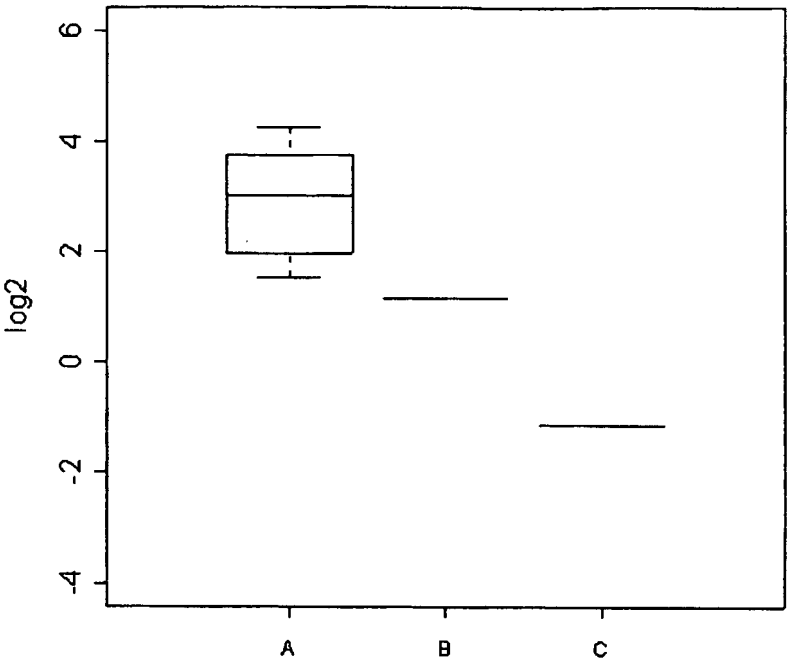
**RHEB2**

[Fig. 049]

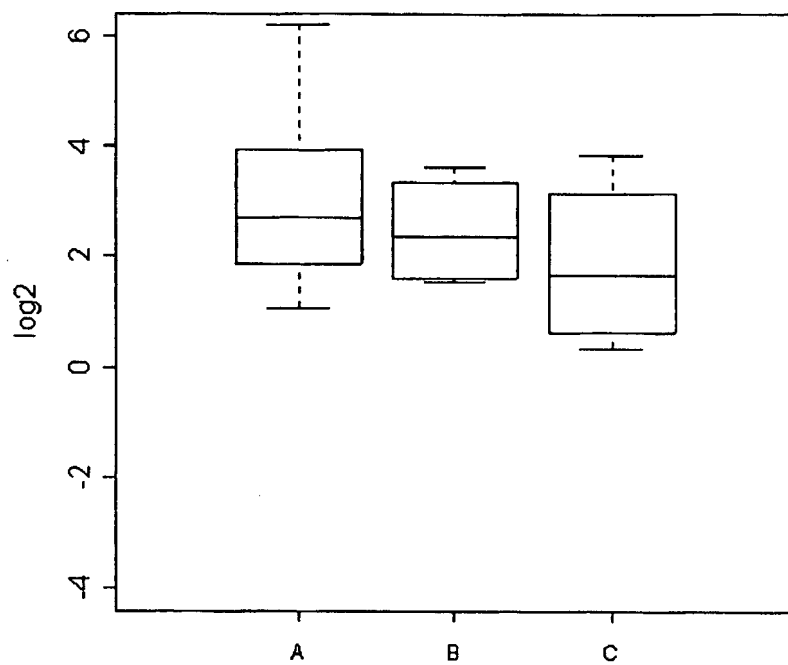
**MARCKS**

[Fig. 050]

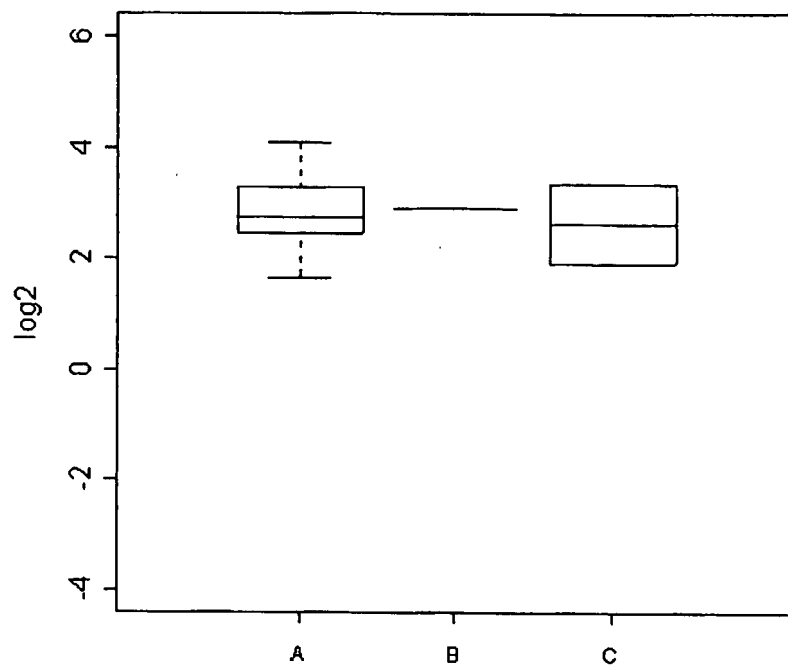
**ALURBP**



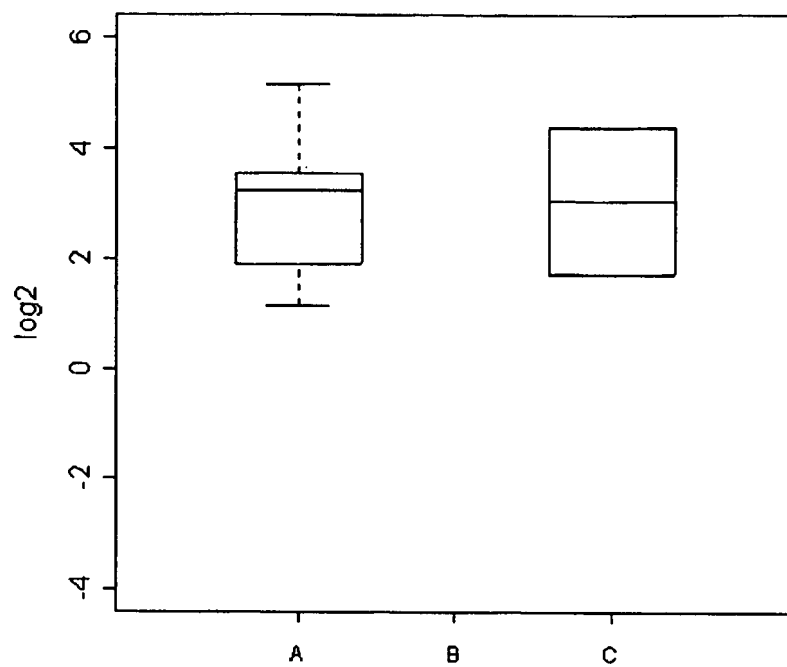
[Fig. 051]

**PPGB**

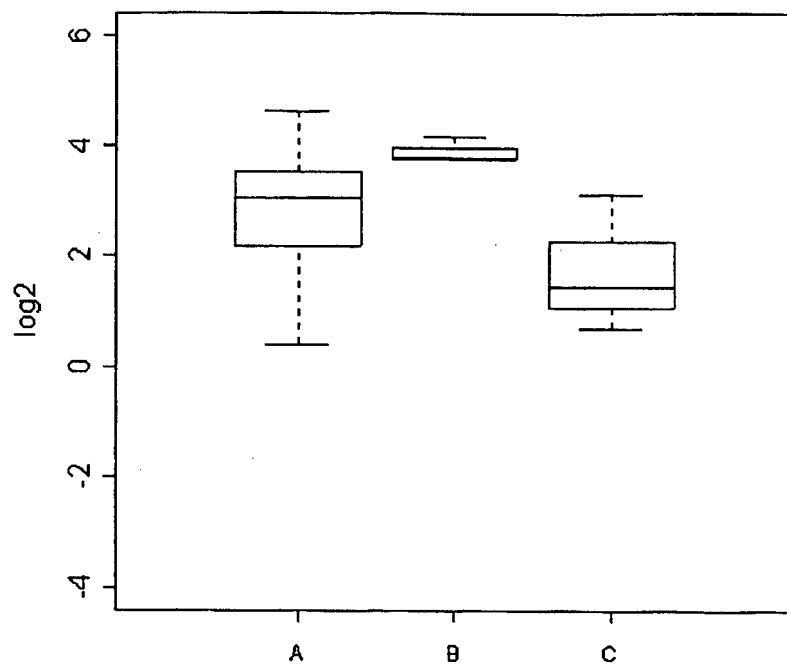
[Fig. 052]

**GRB2**

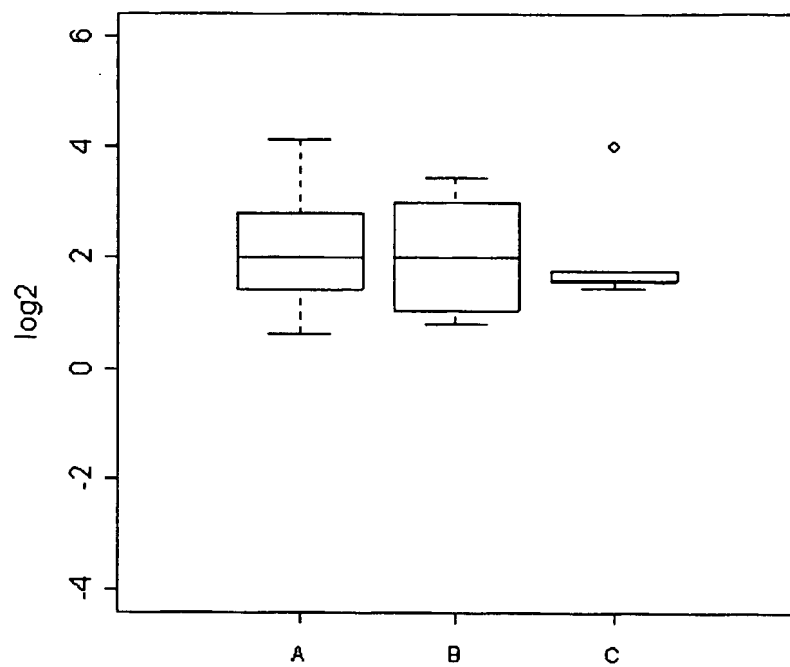
[Fig. 053]

**TRAP1**

[Fig. 054]

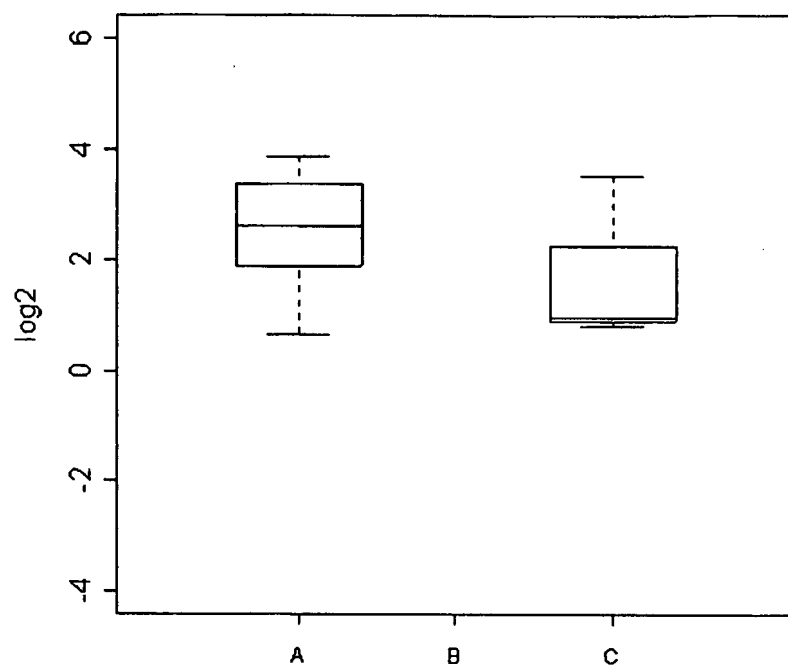
**PDHB**

[Fig. 055]

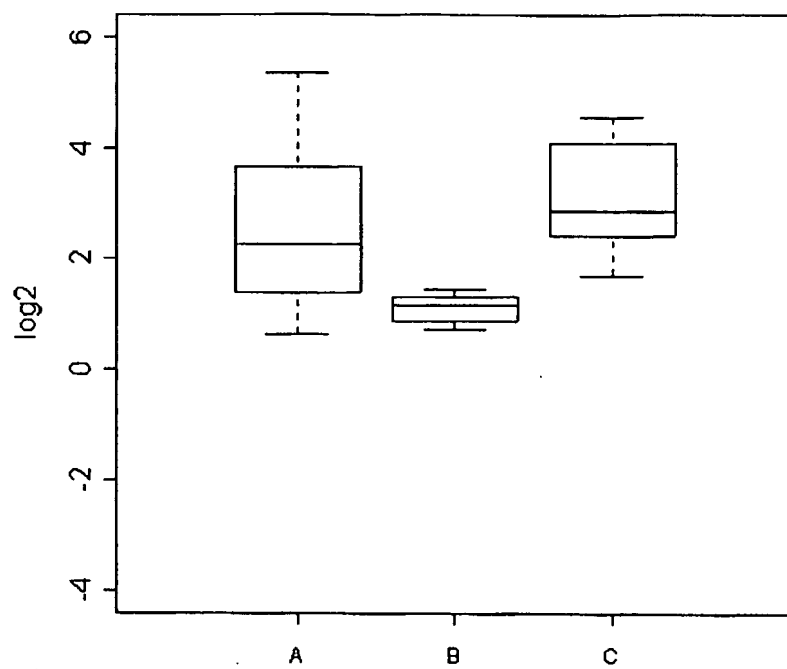
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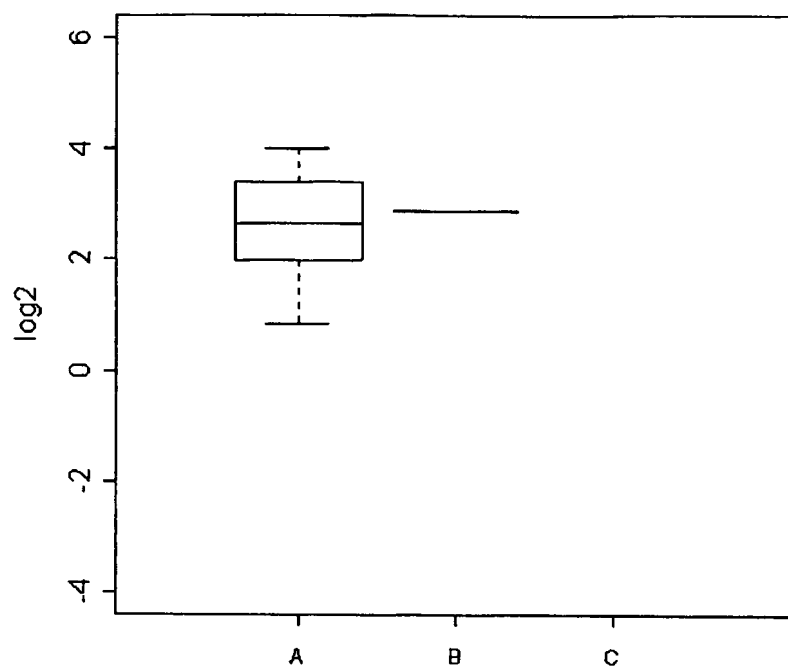
[Fig. 056]

**PSME2**

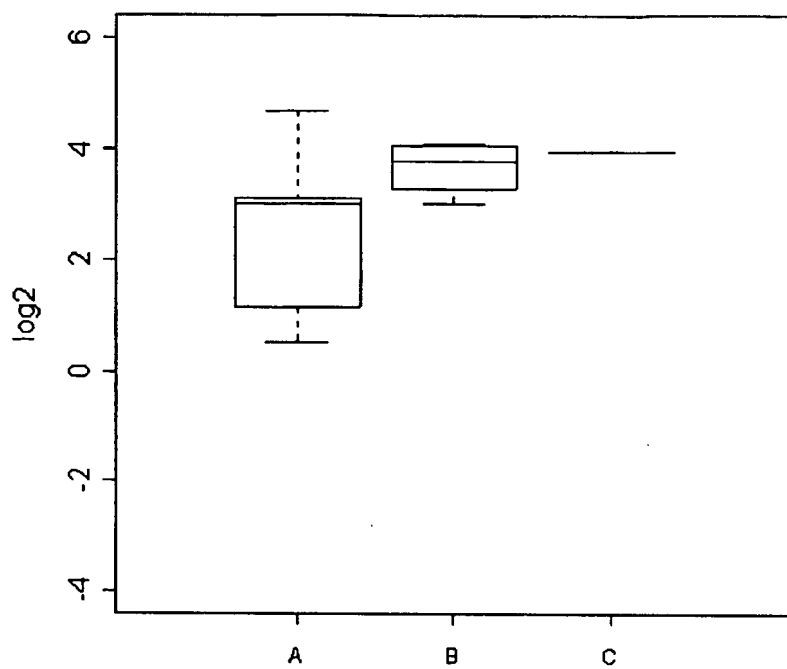
[Fig. 057]

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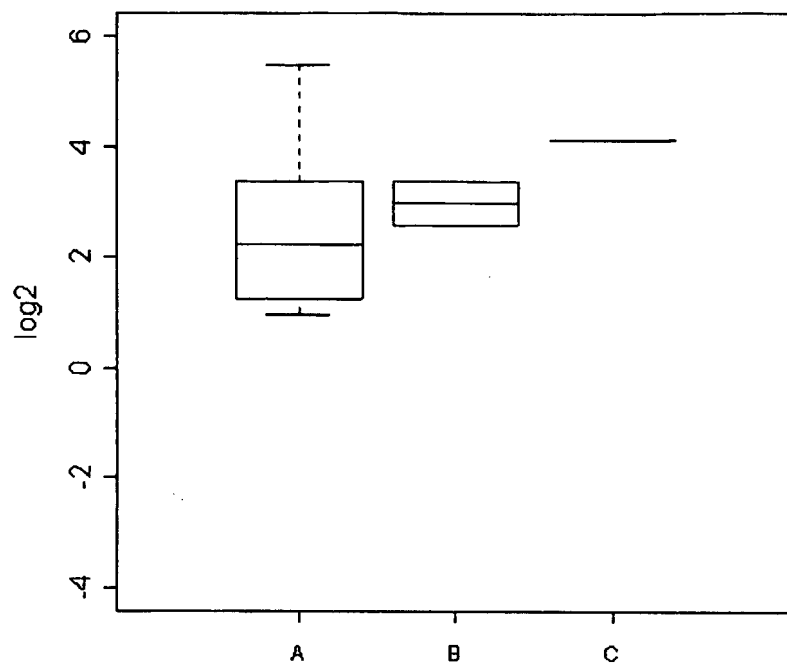
[Fig. 058]

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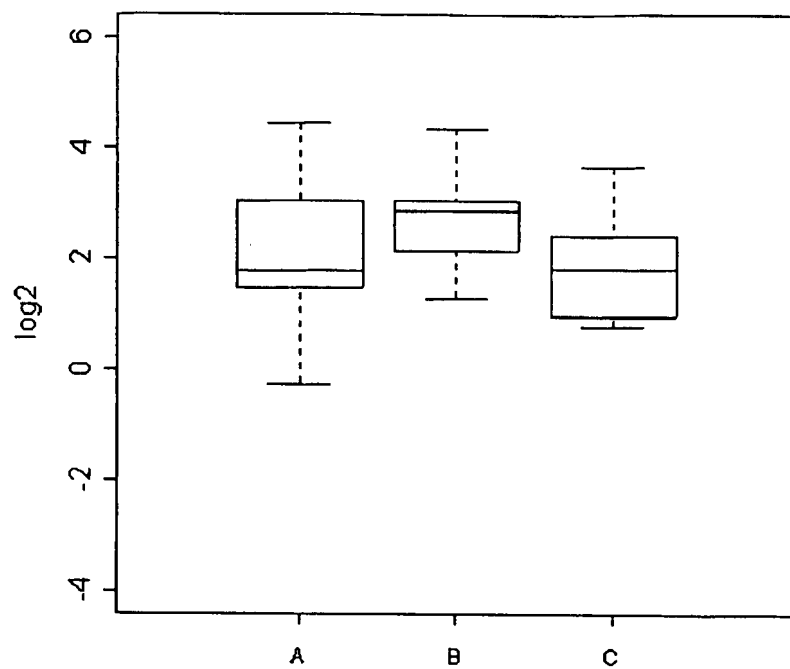
[Fig. 059]

**ARF4**

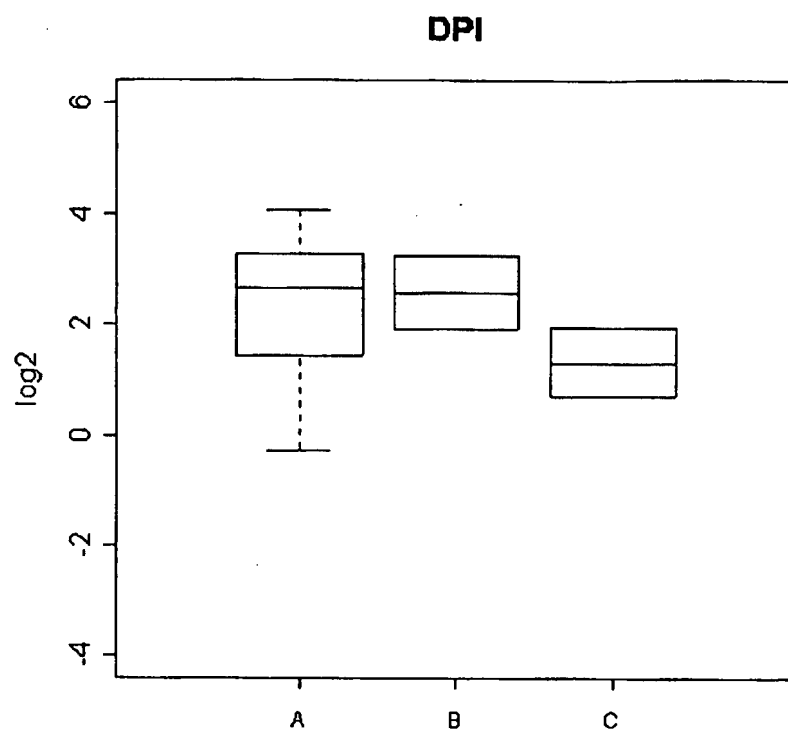
[Fig. 060]

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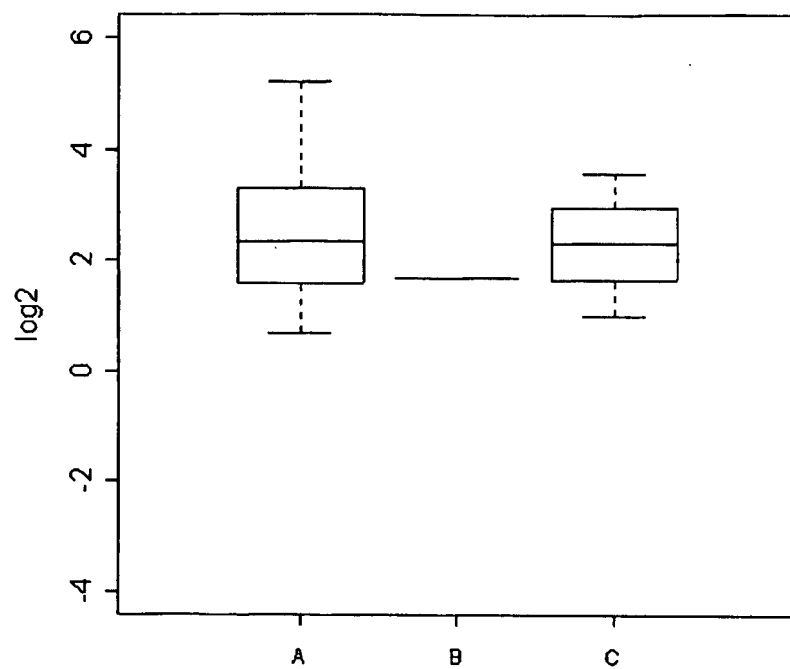
[Fig. 061]

**GNG10**

[Fig. 062]

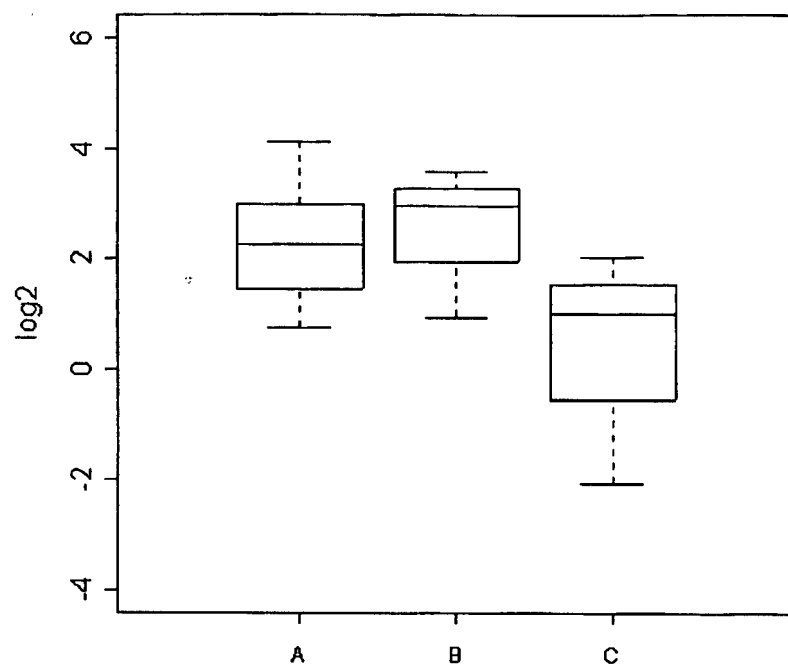


[Fig. 063]

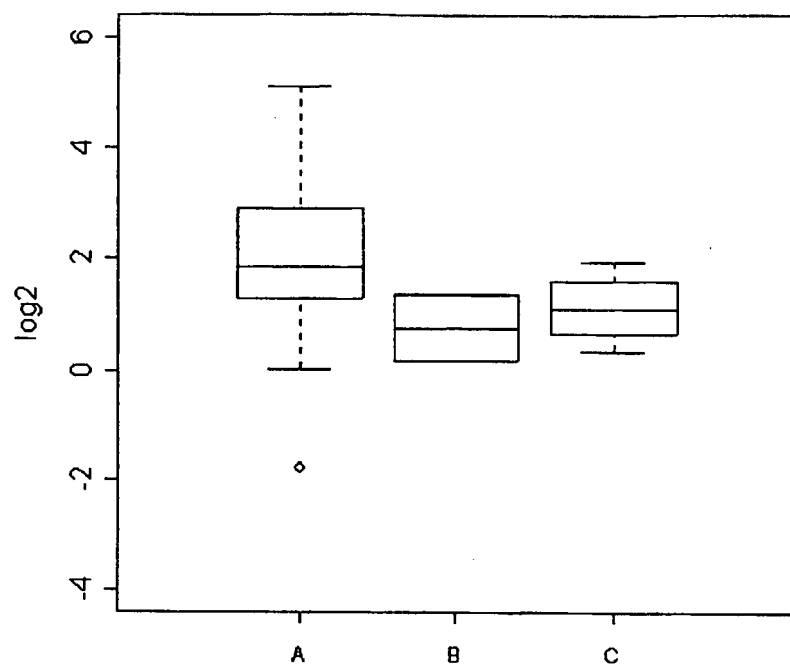
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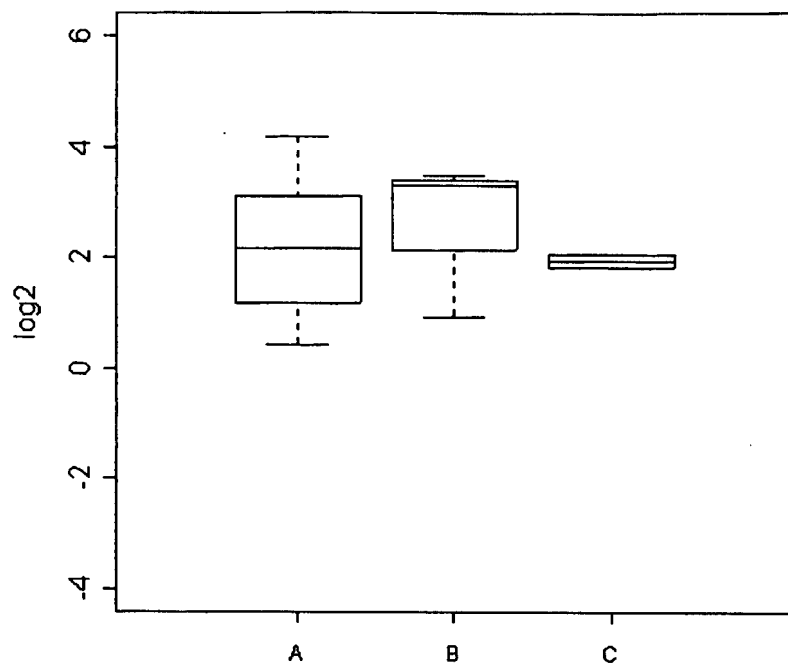
[Fig. 064]

**SLC25A3**

[Fig. 065]

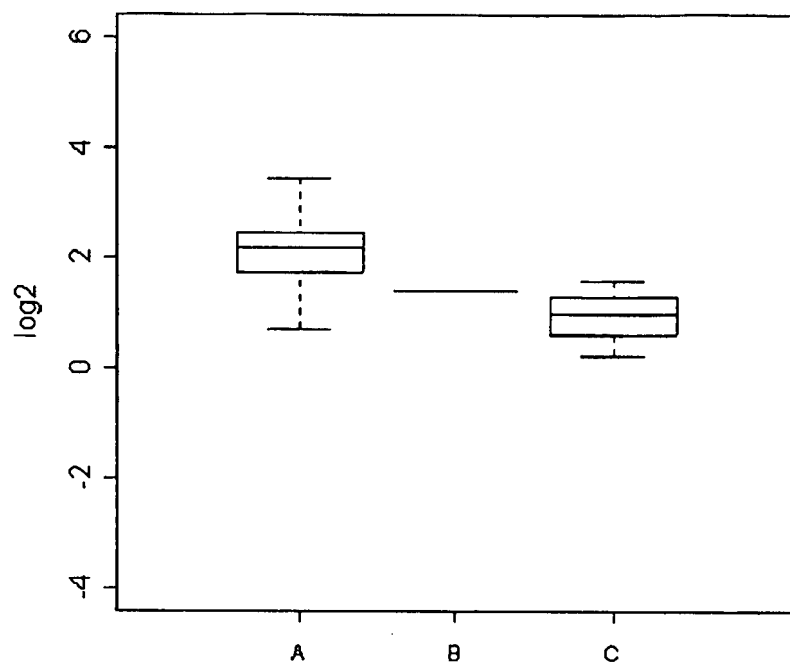
**SNC6**

[Fig. 066]

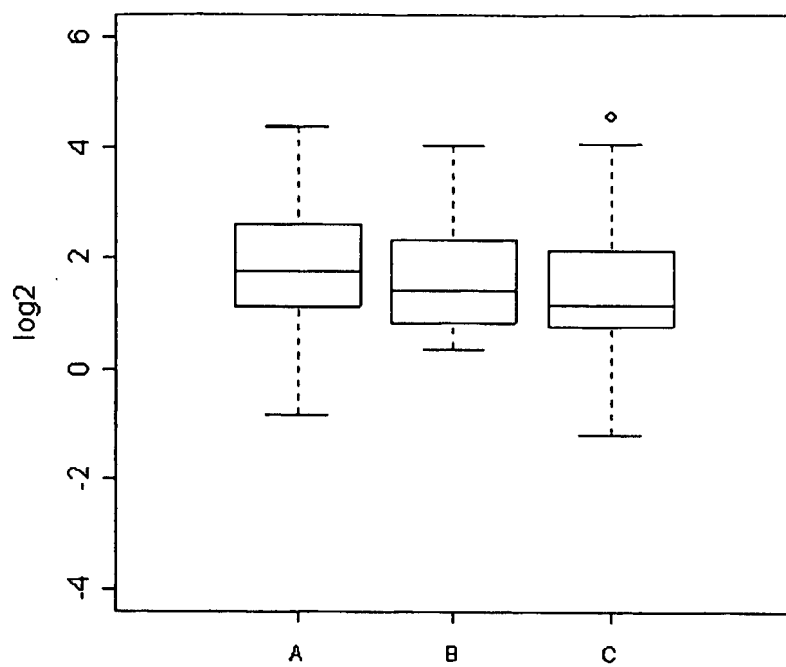
**OMG**

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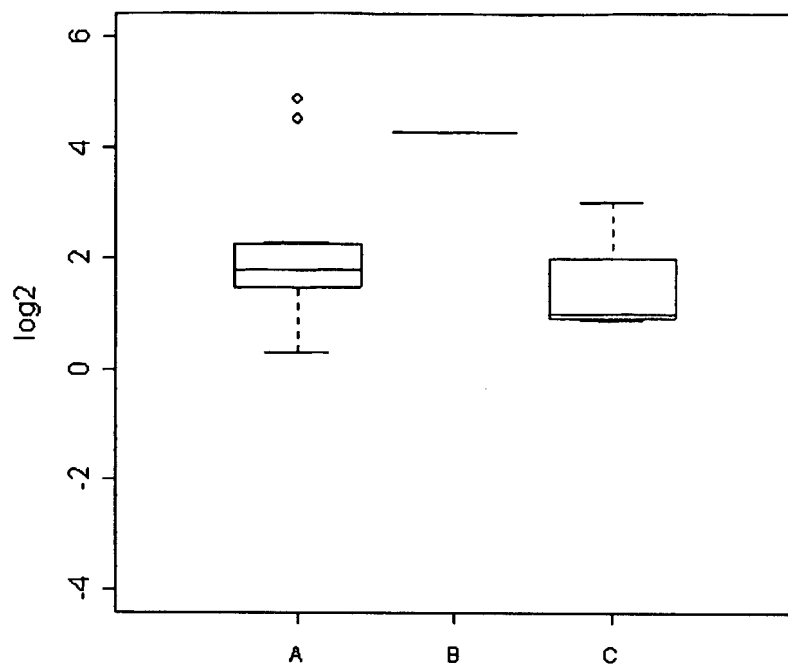
[Fig. 067]

**PB1S**

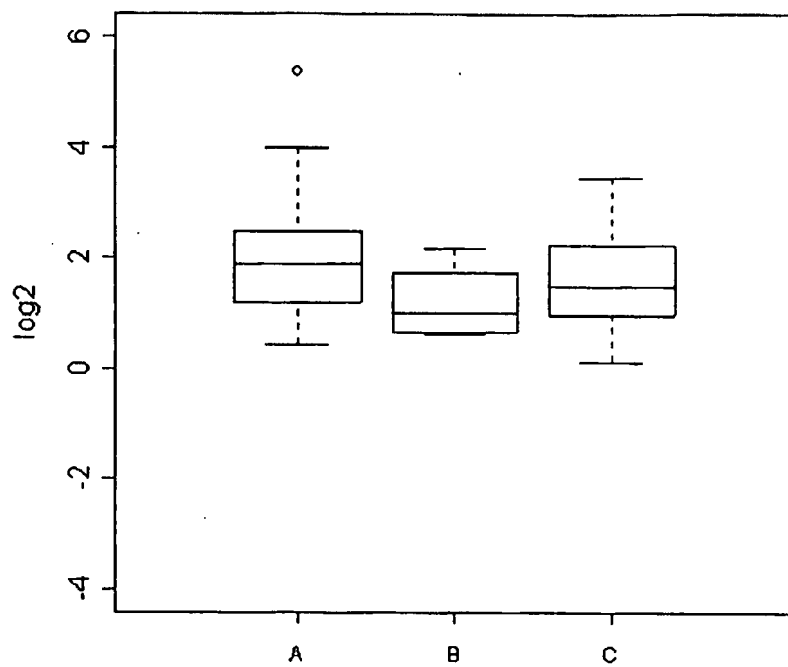
[Fig. 068]

**RPS21**

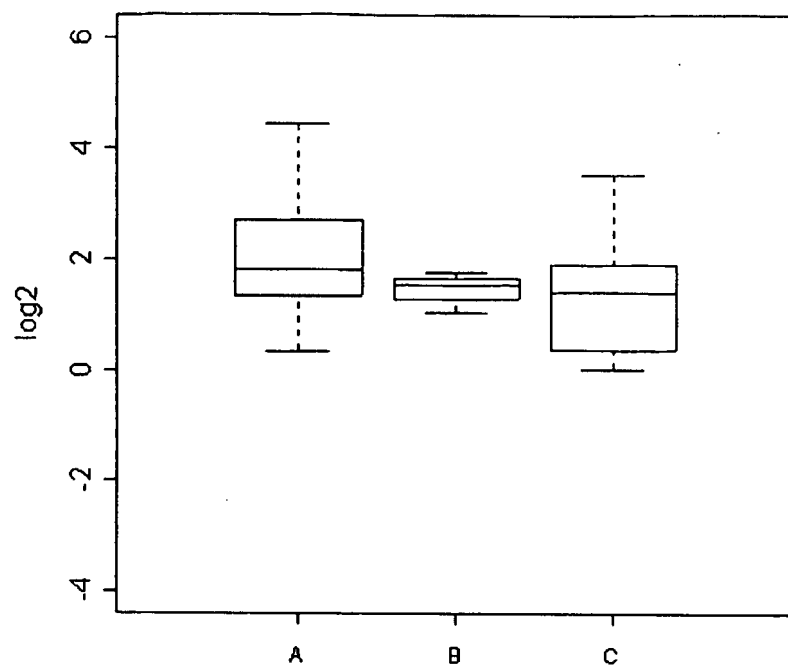
[Fig. 069]

**MMP-2**

[Fig. 070]

**YWHAZ**

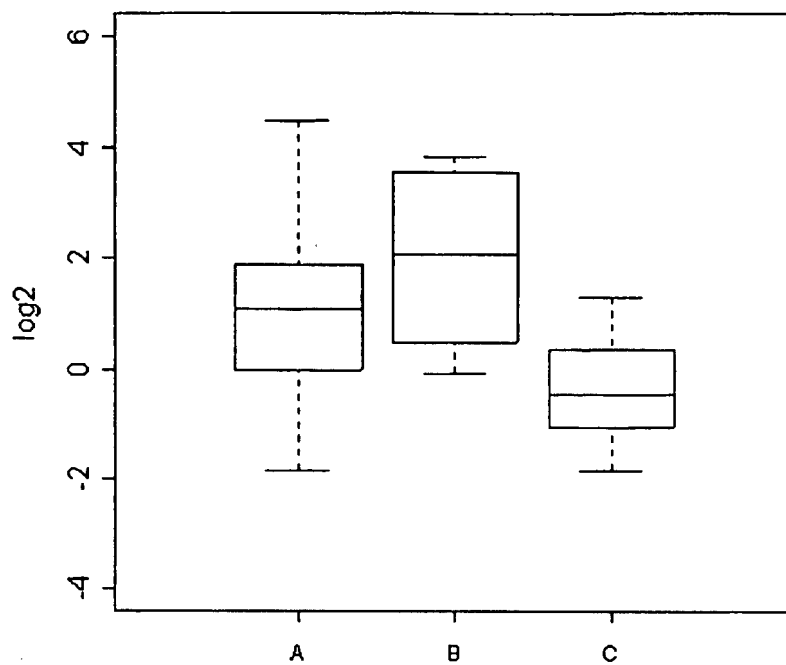
[Fig. 071]

**PPP3R1**



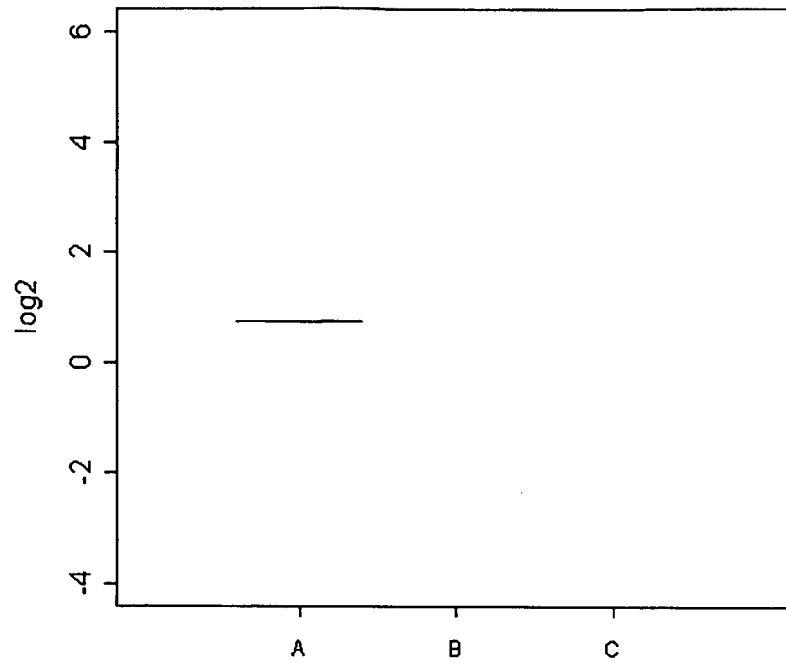
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[Fig. 072]

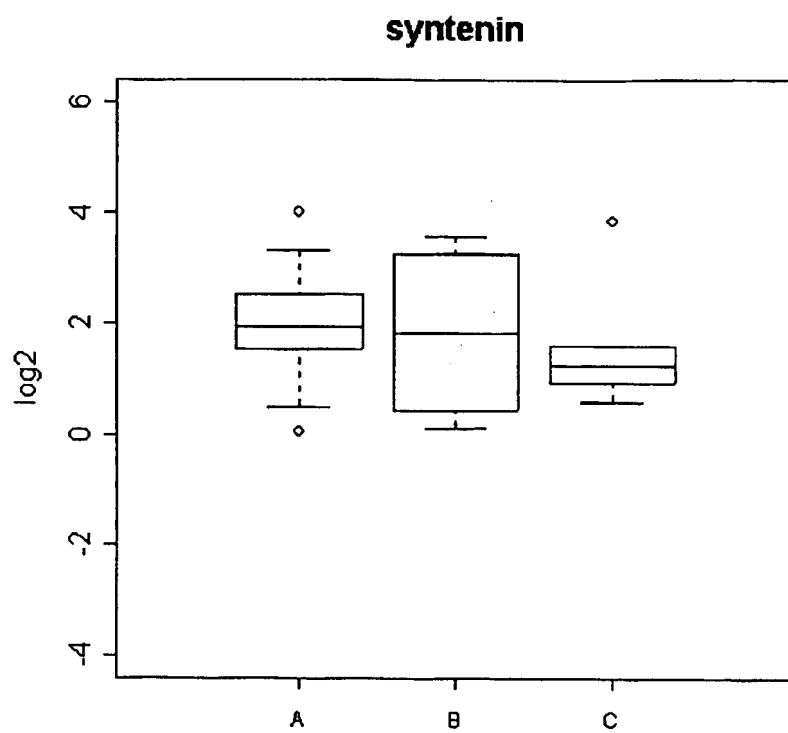
**CTNNA1**

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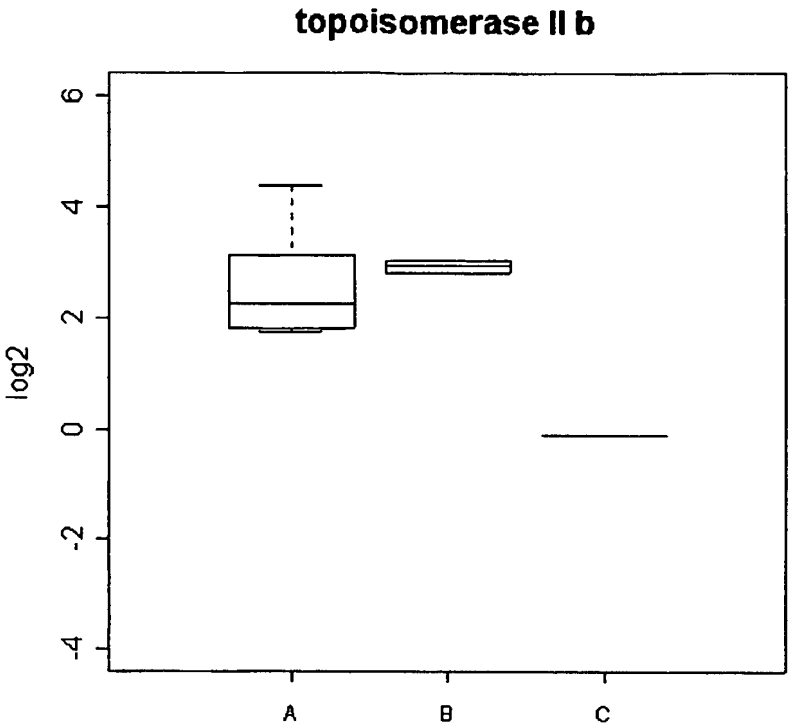
[Fig. 073]

**ADCYAP1**

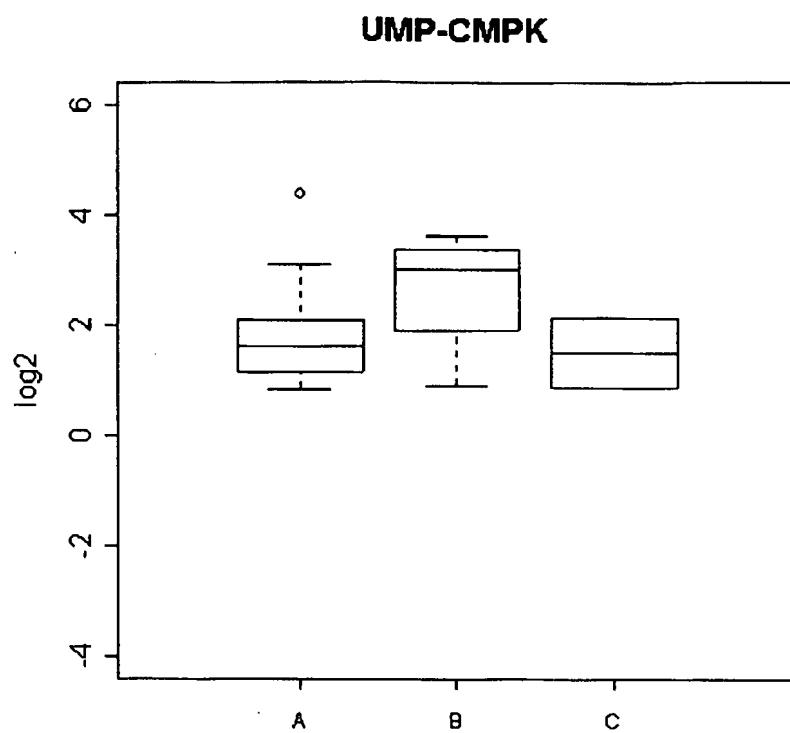
[Fig. 074]



[Fig. 075]

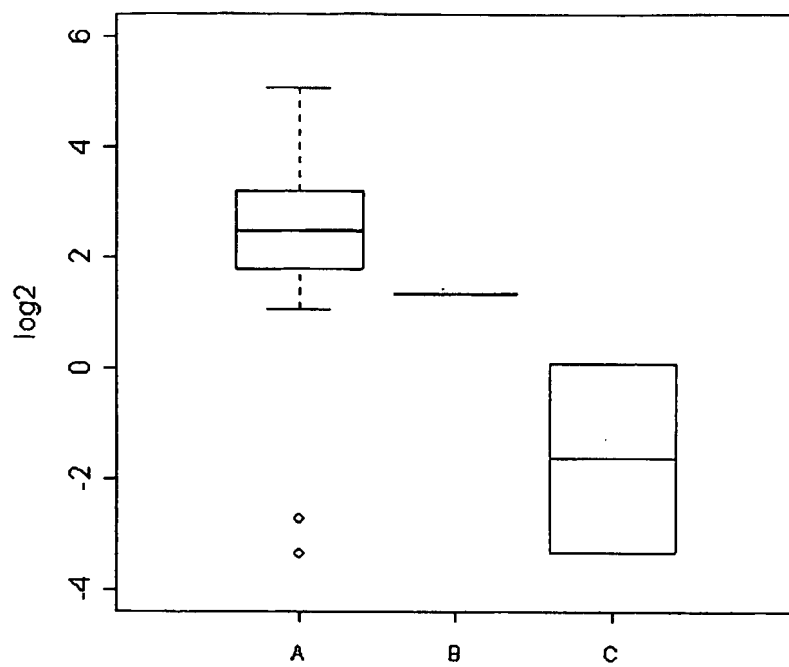


[Fig. 076]

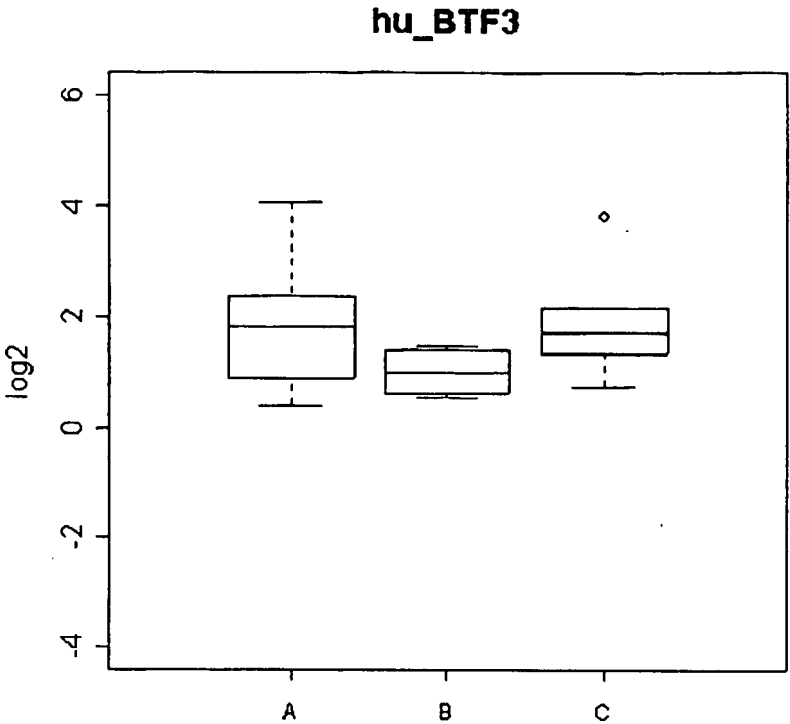


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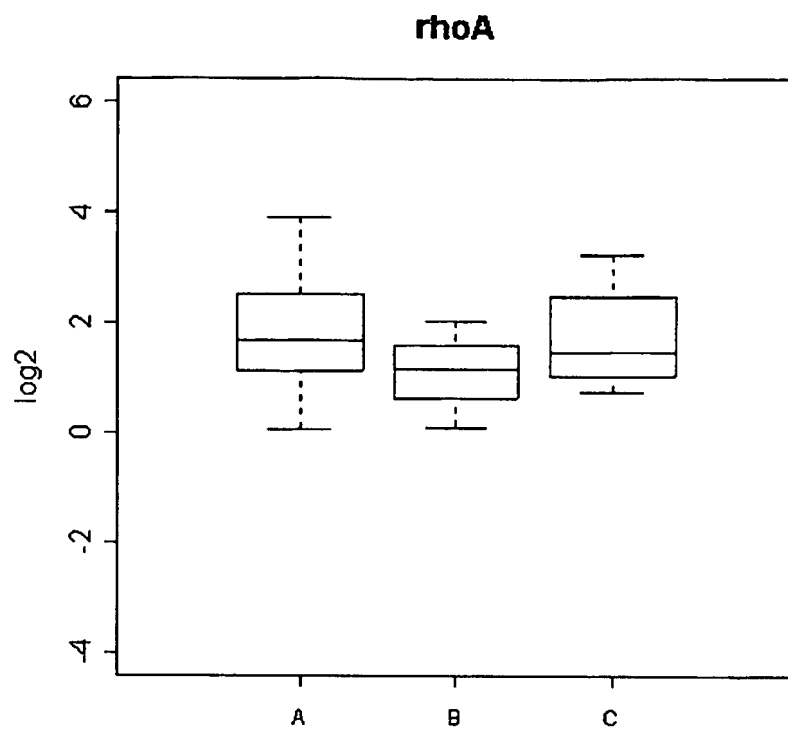
[Fig. 077]

**PSMD4**

[Fig. 078]

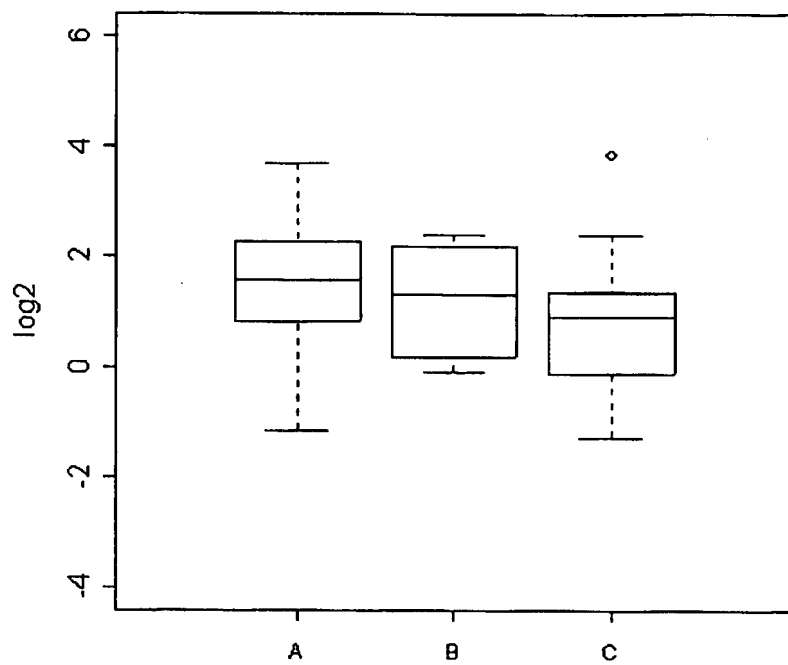


[Fig. 079]

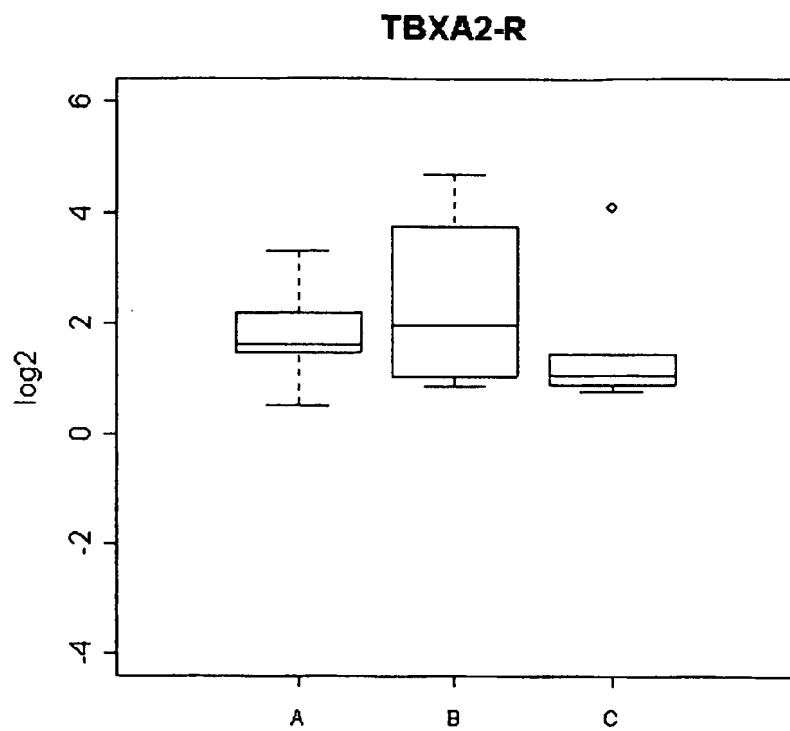




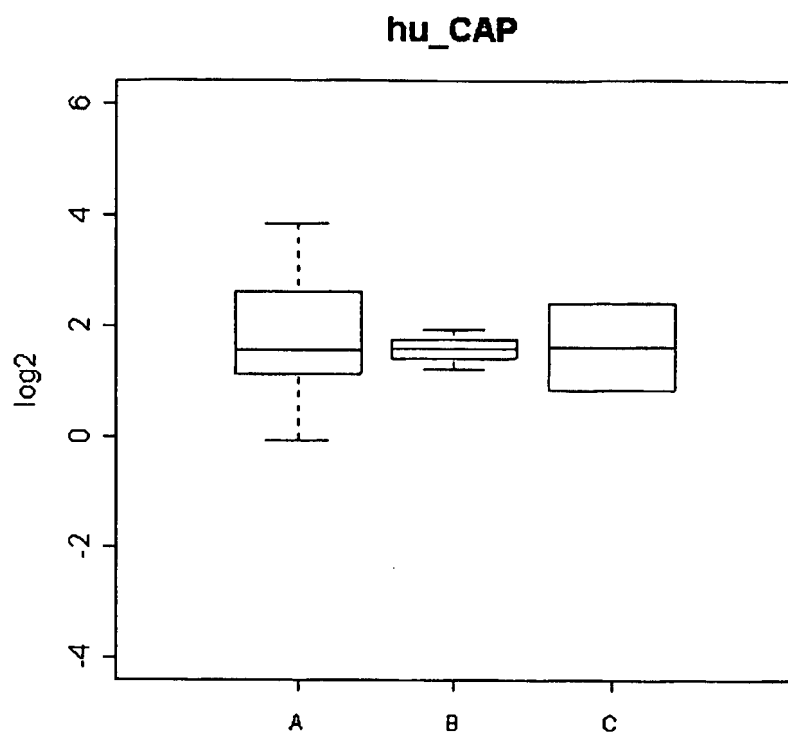
[Fig. 080]

**LDH-B**

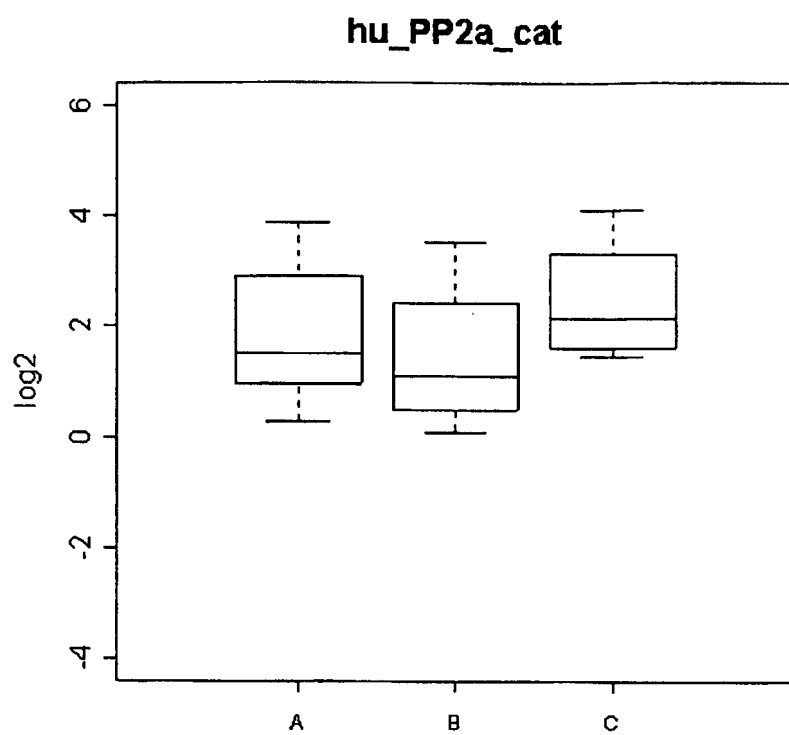
[Fig. 081]



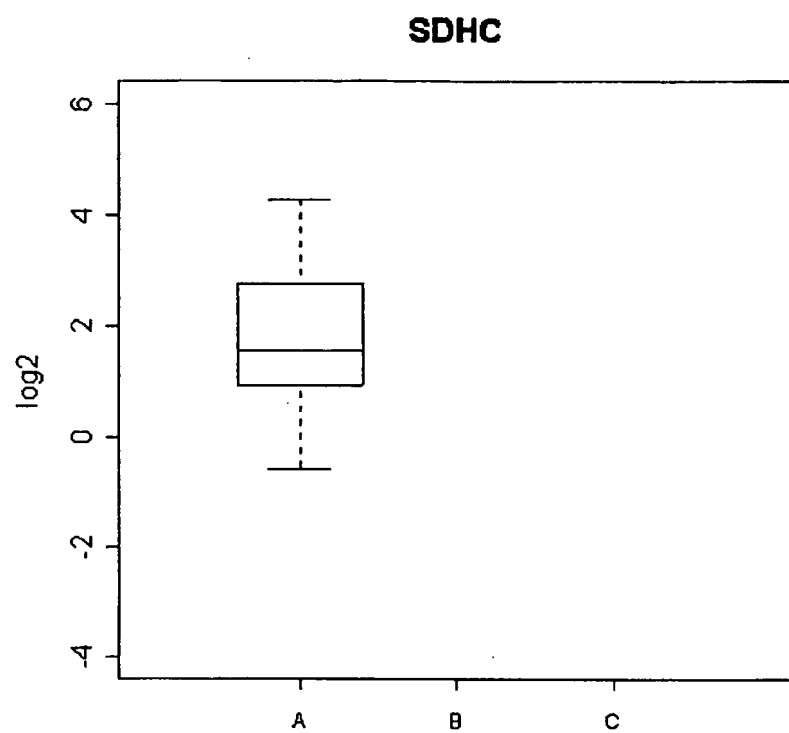
[Fig. 082]



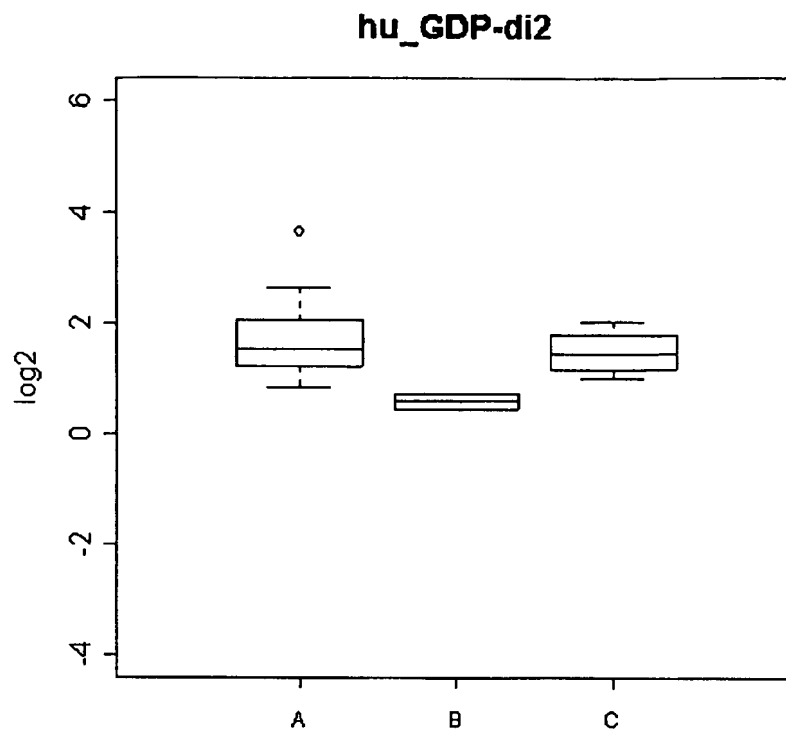
[Fig. 083]



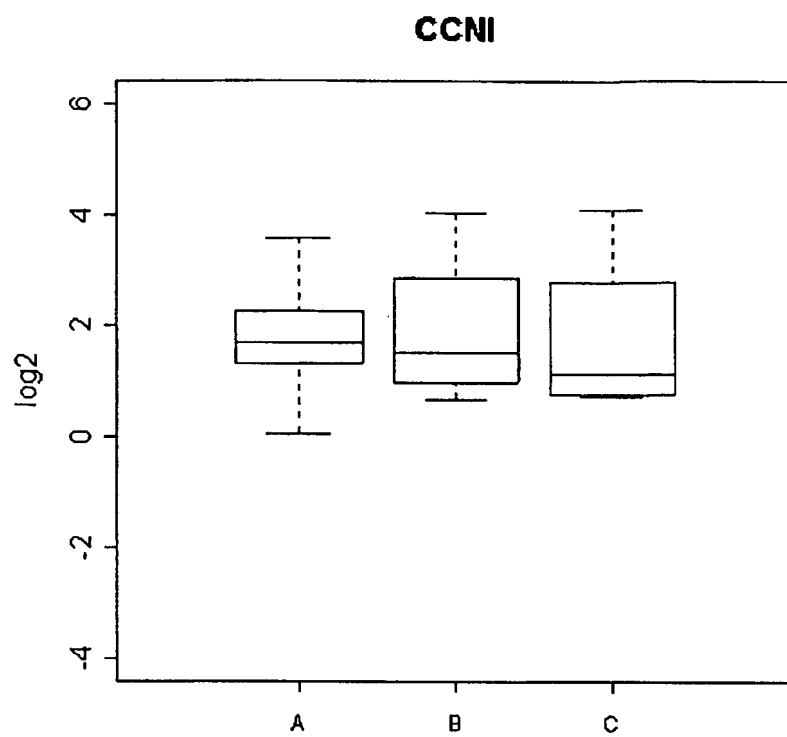
[Fig. 084]



[Fig. 085]

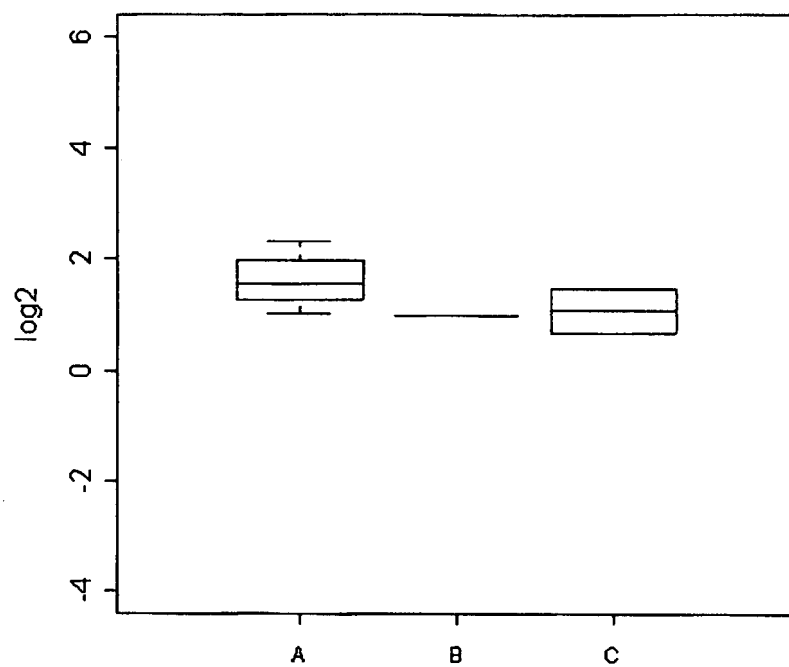


[Fig. 086]



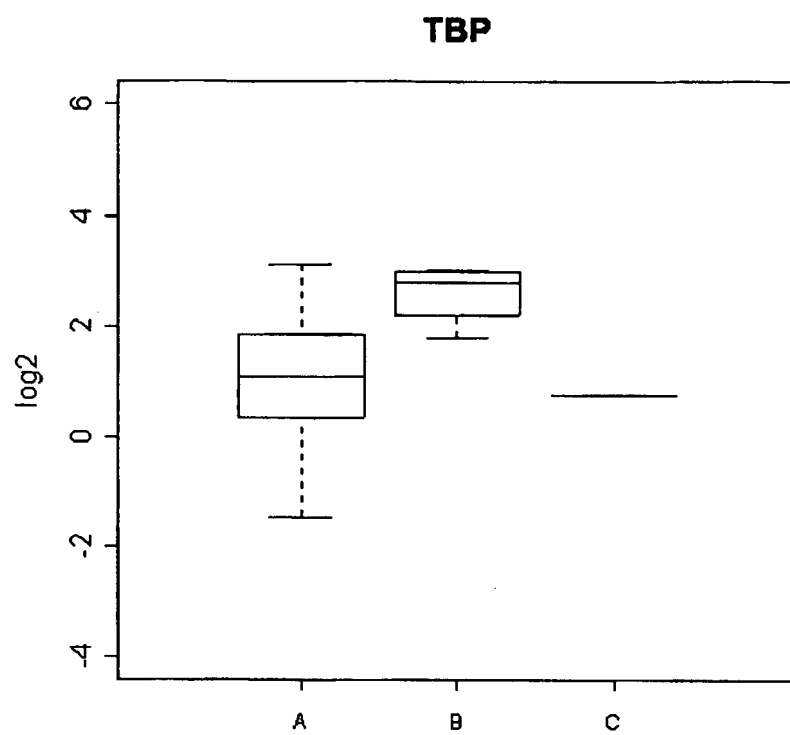
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[Fig. 087]

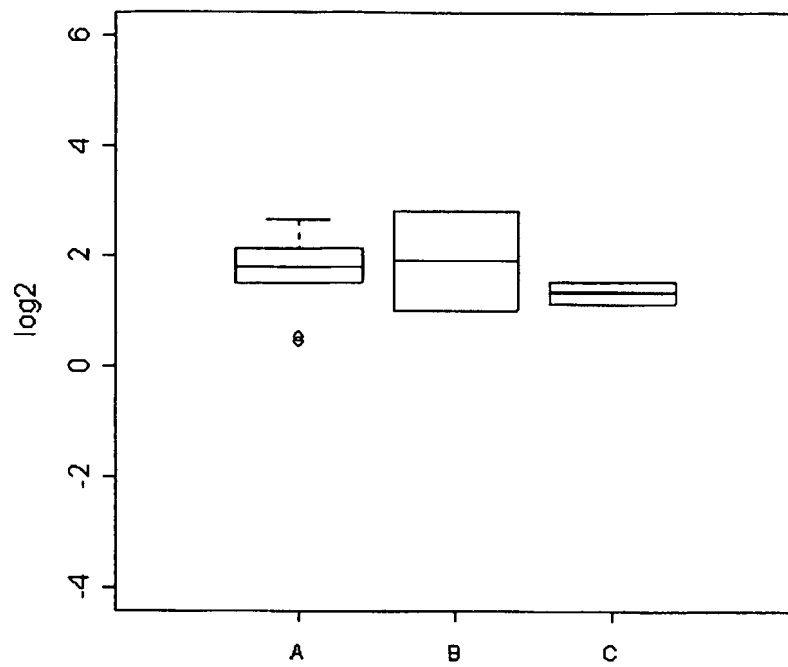
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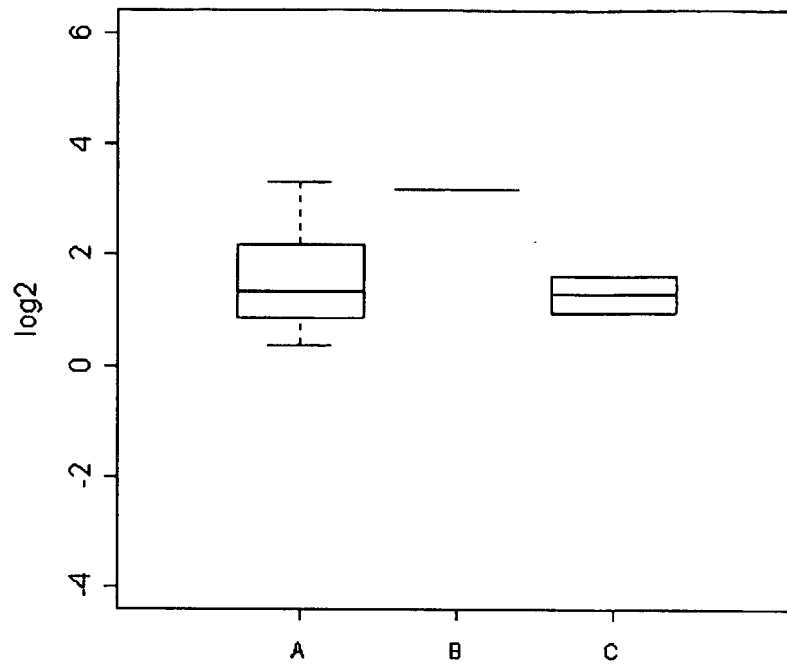
[Fig. 088]



[Fig. 089]

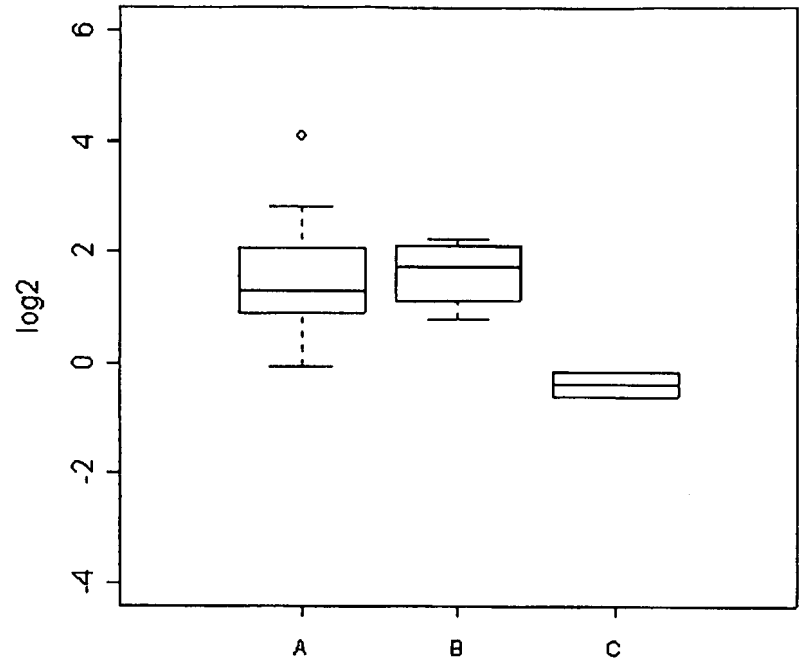
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[Fig. 090]

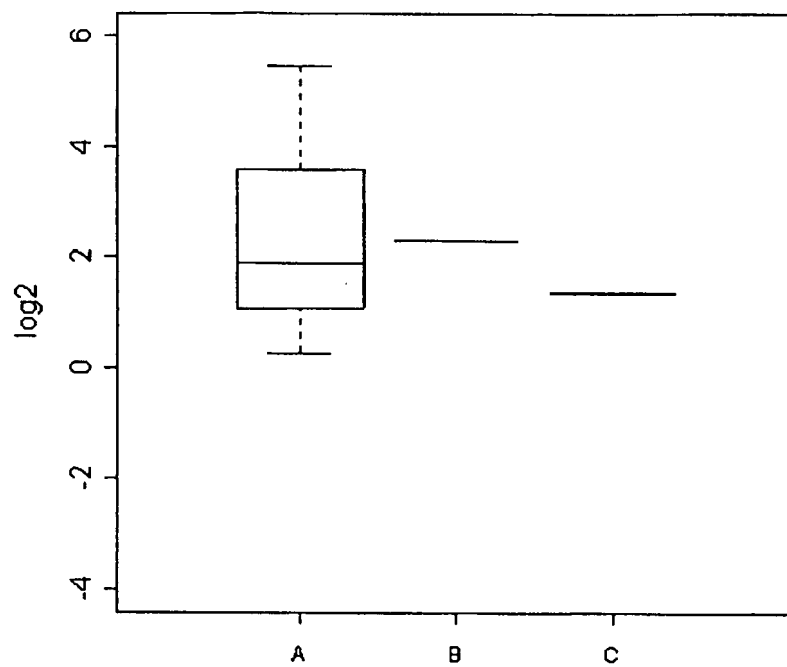
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[Fig. 091]

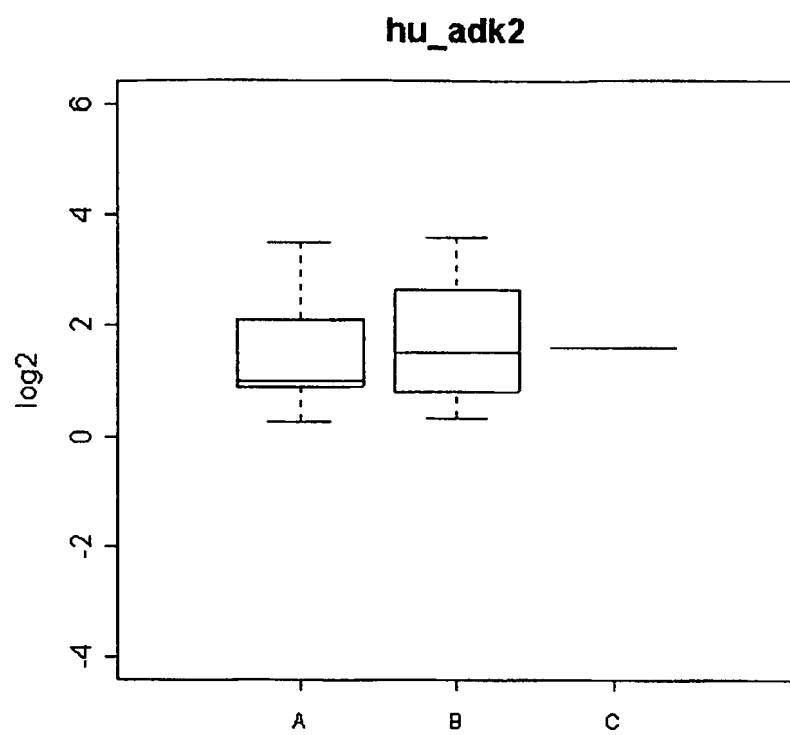
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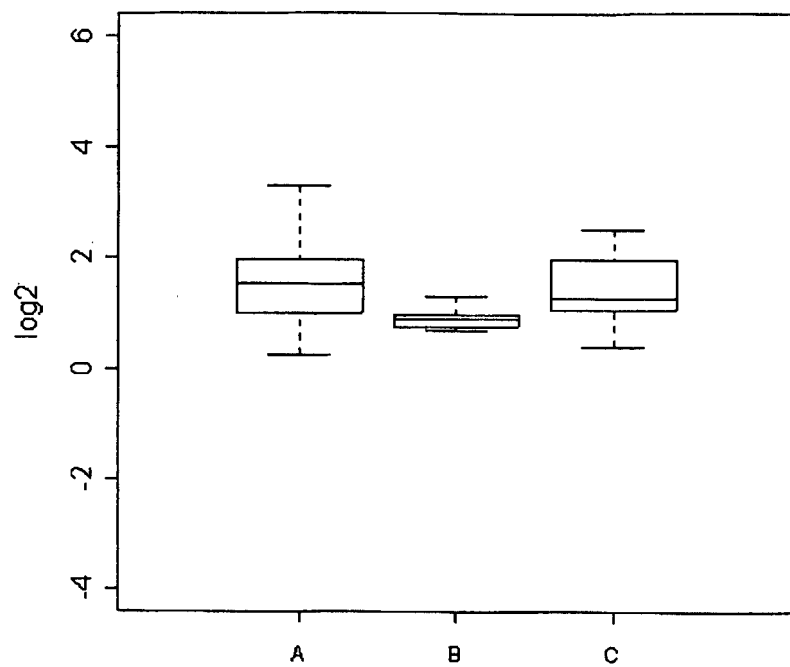
[Fig. 092]

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[Fig. 093]

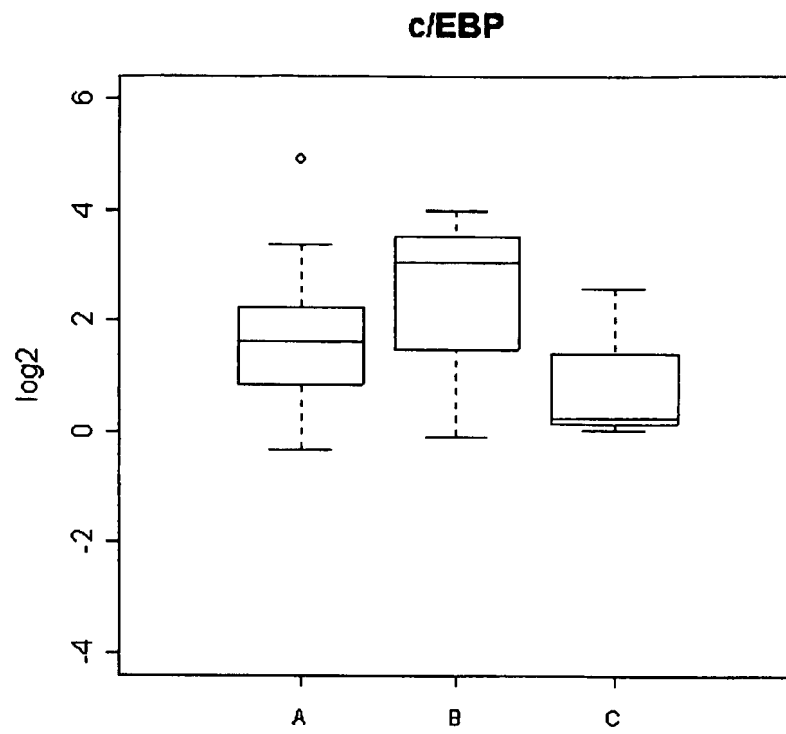


[Fig. 094]

**hu\_Dcsa19**

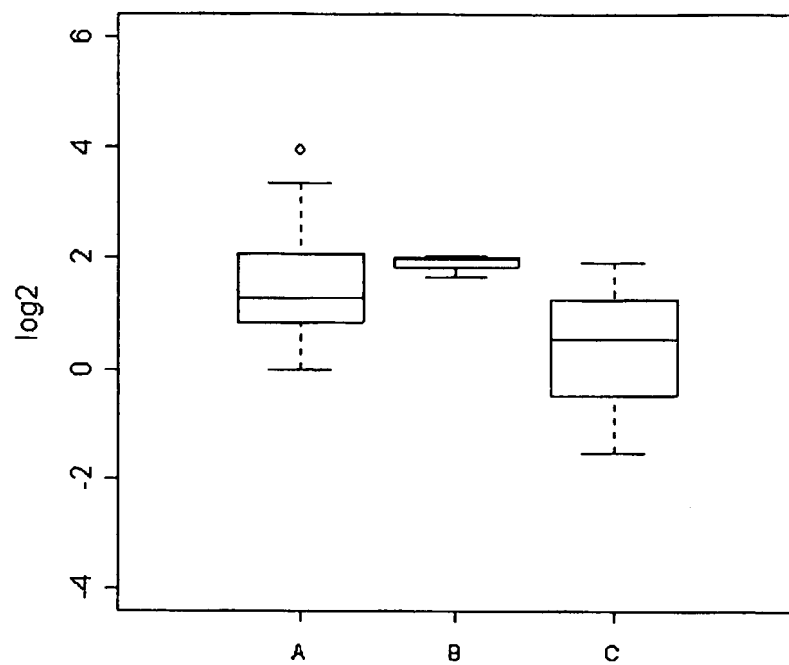
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[Fig. 095]



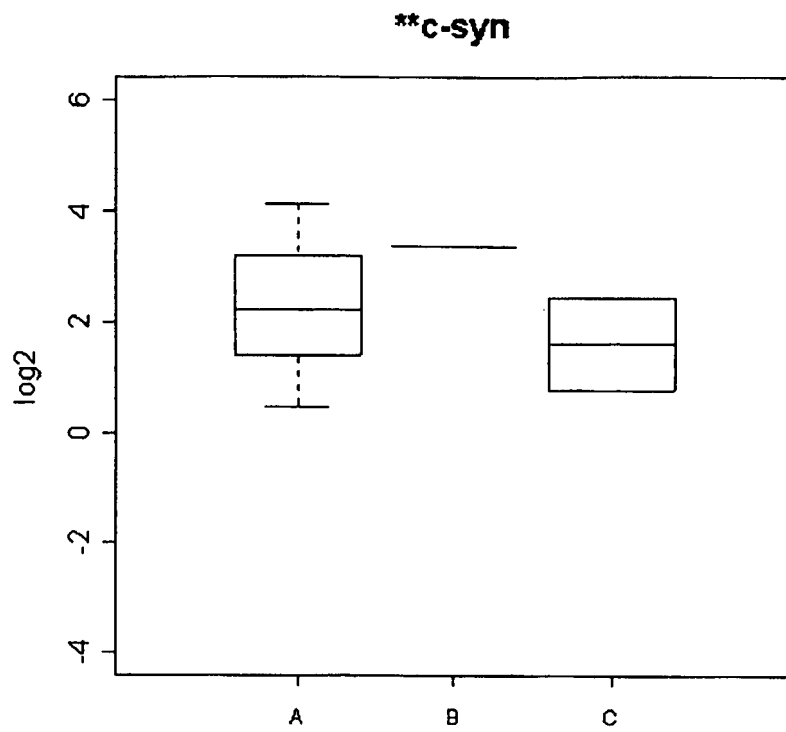


[Fig. 096]

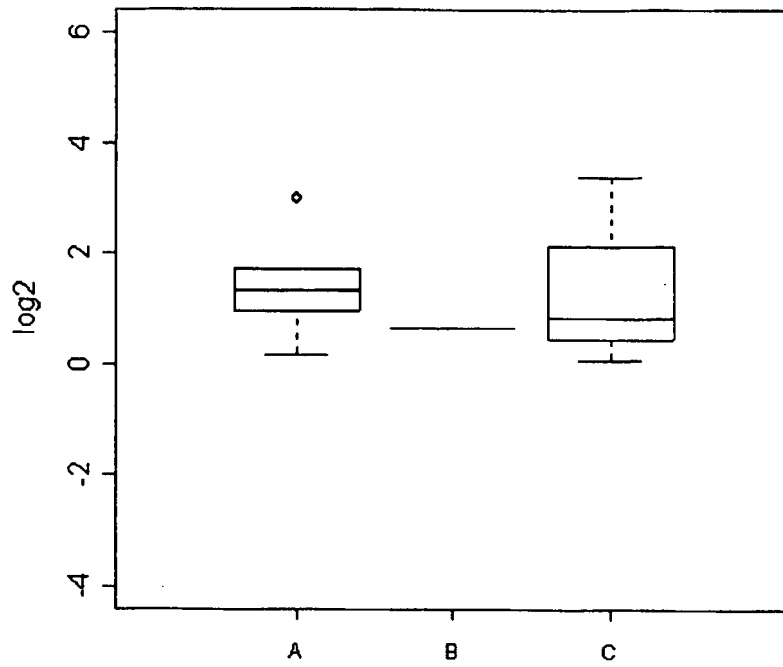
**RabGG**

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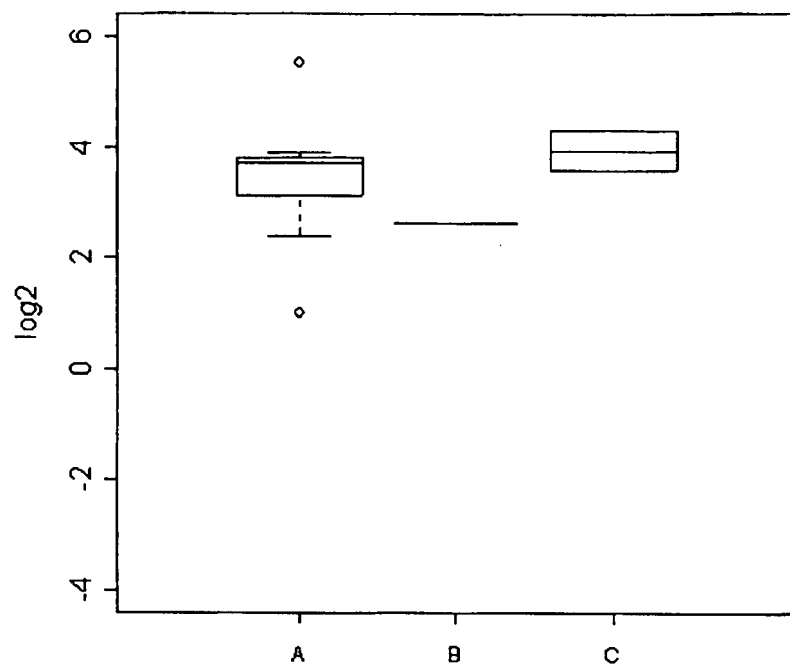
[Fig. 097]



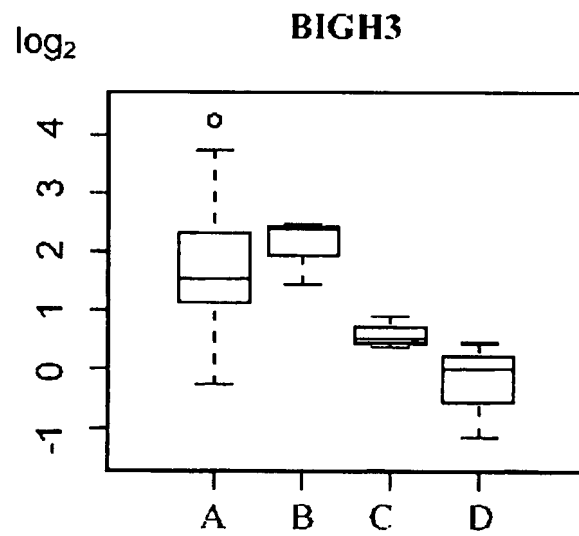
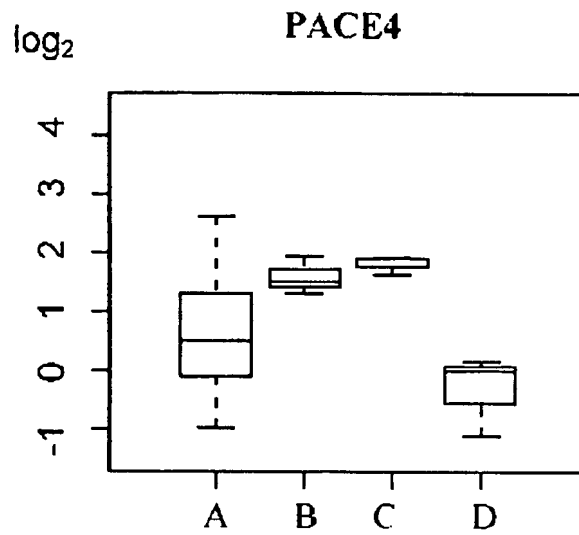
[Fig. 098]

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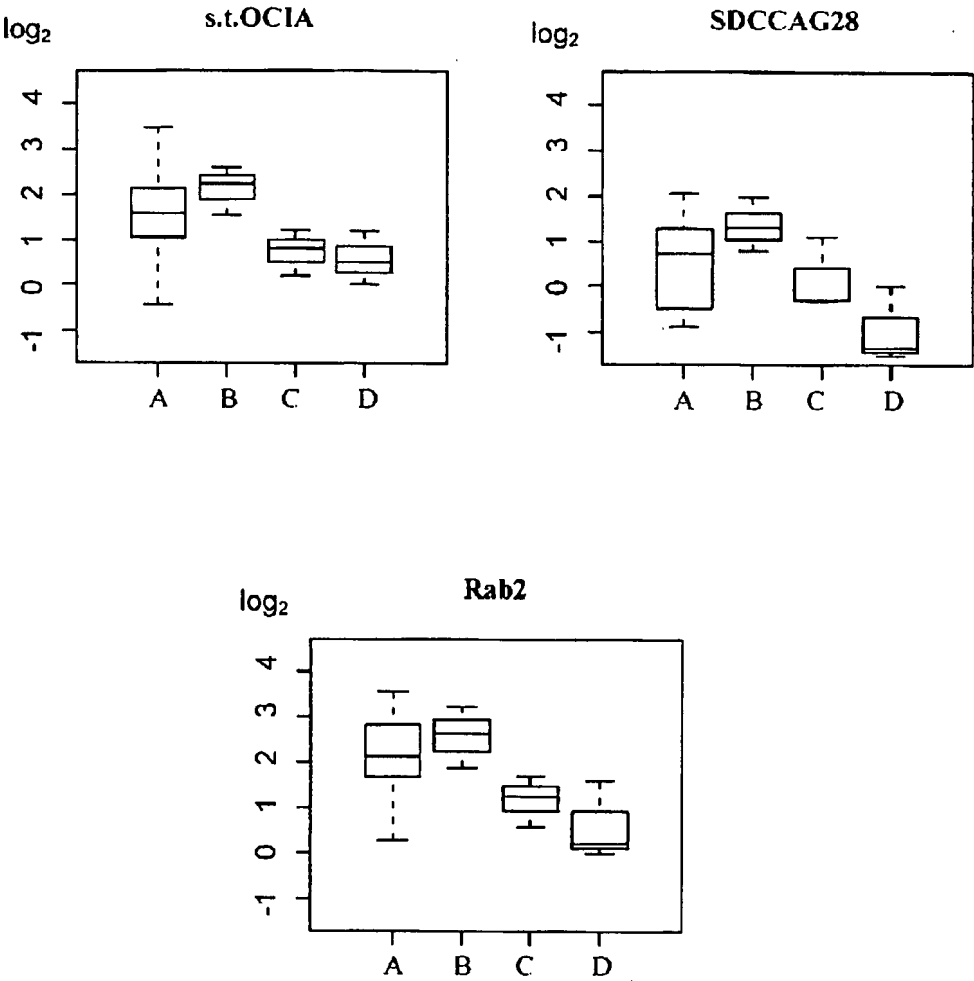
[Fig. 099]

**SCL5A6**

[Fig. 100]

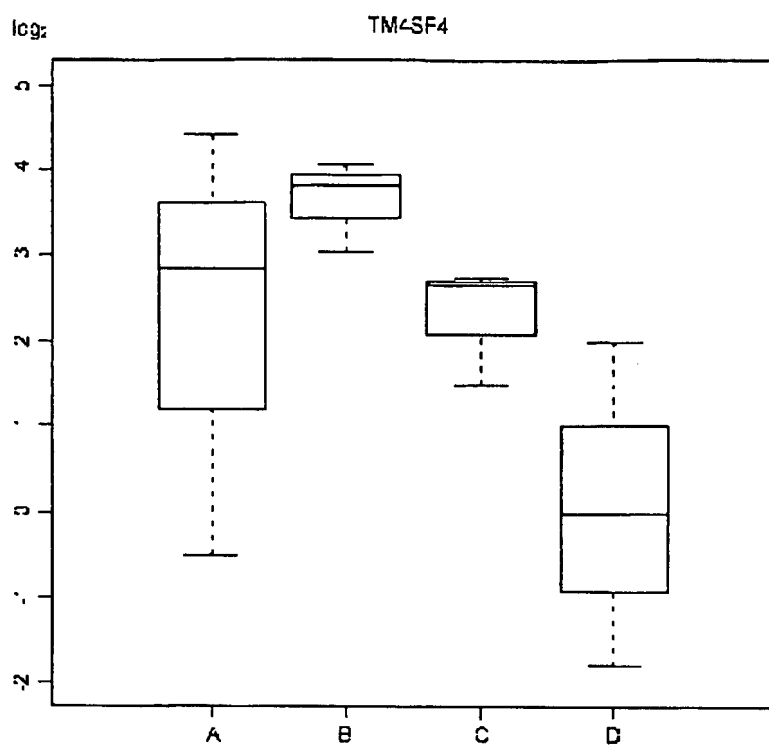


[Fig. 101]

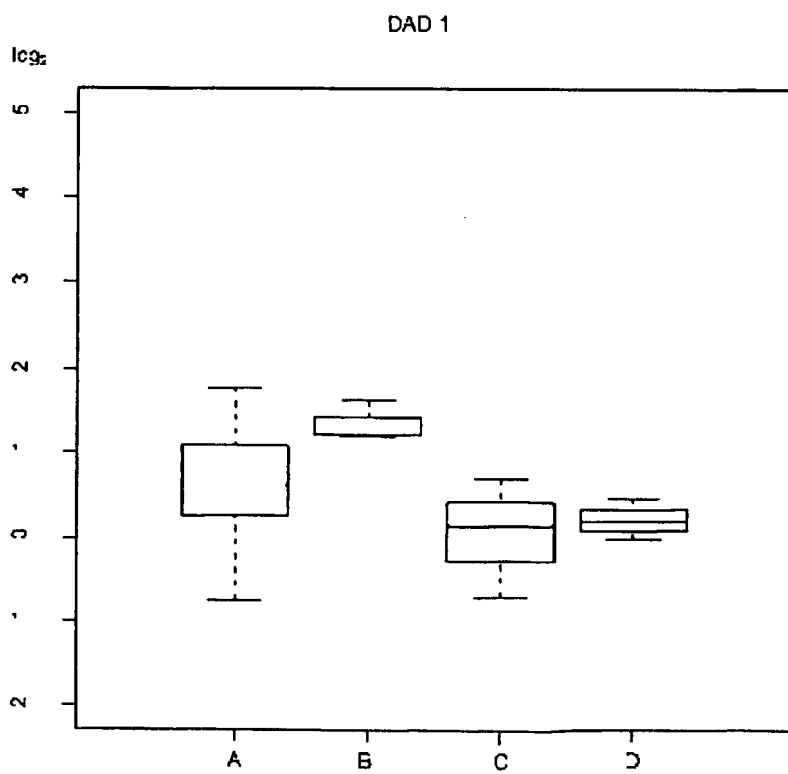


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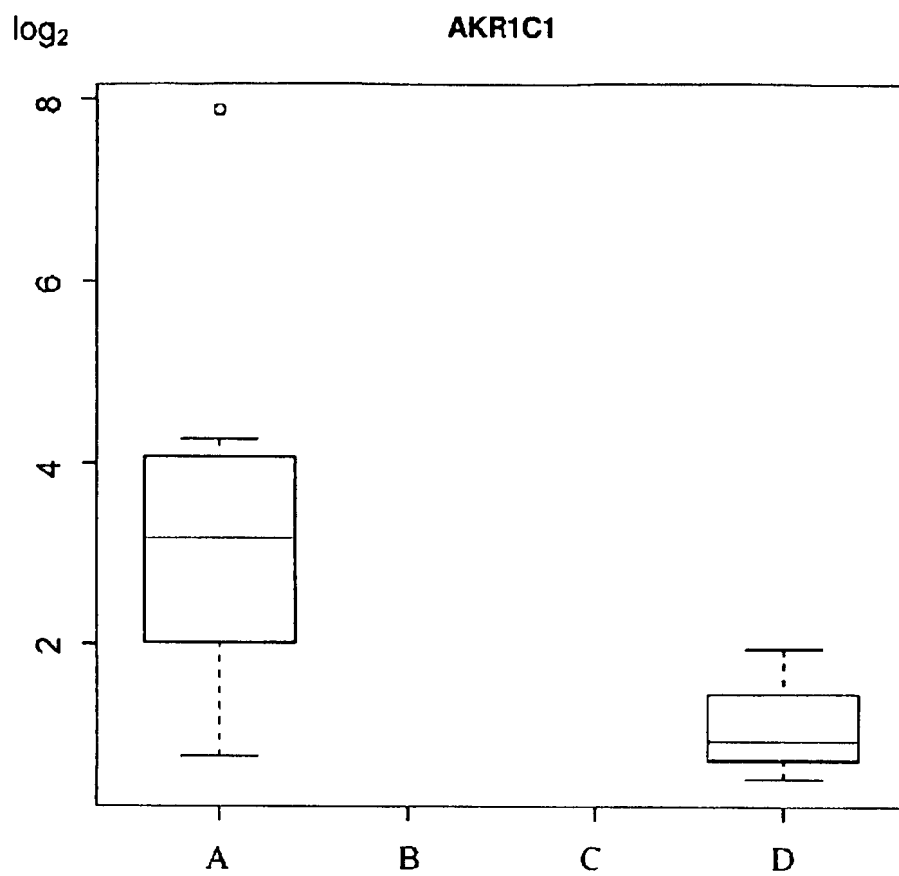
[Fig. 102]



[Fig. 103]

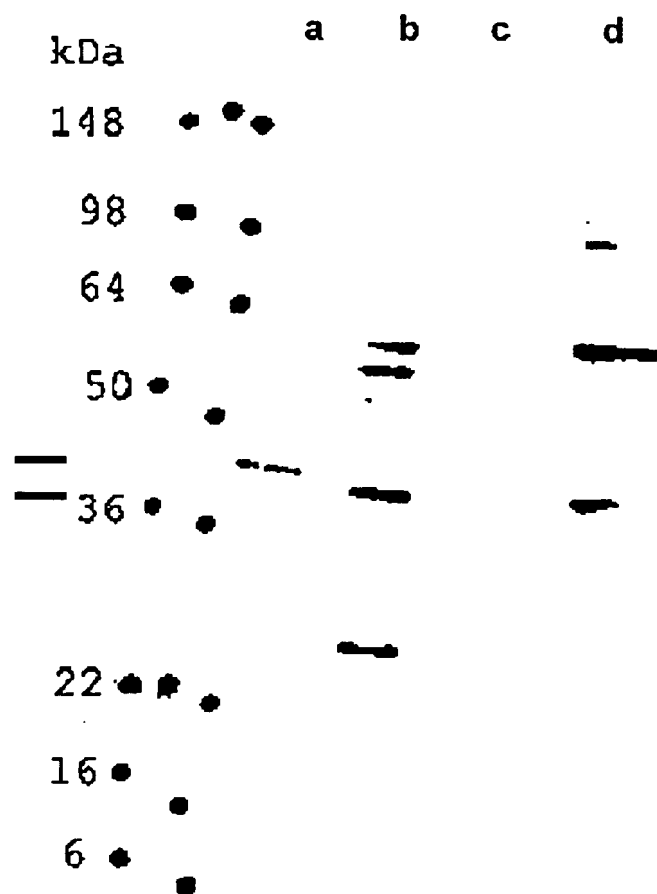


[Fig. 104]

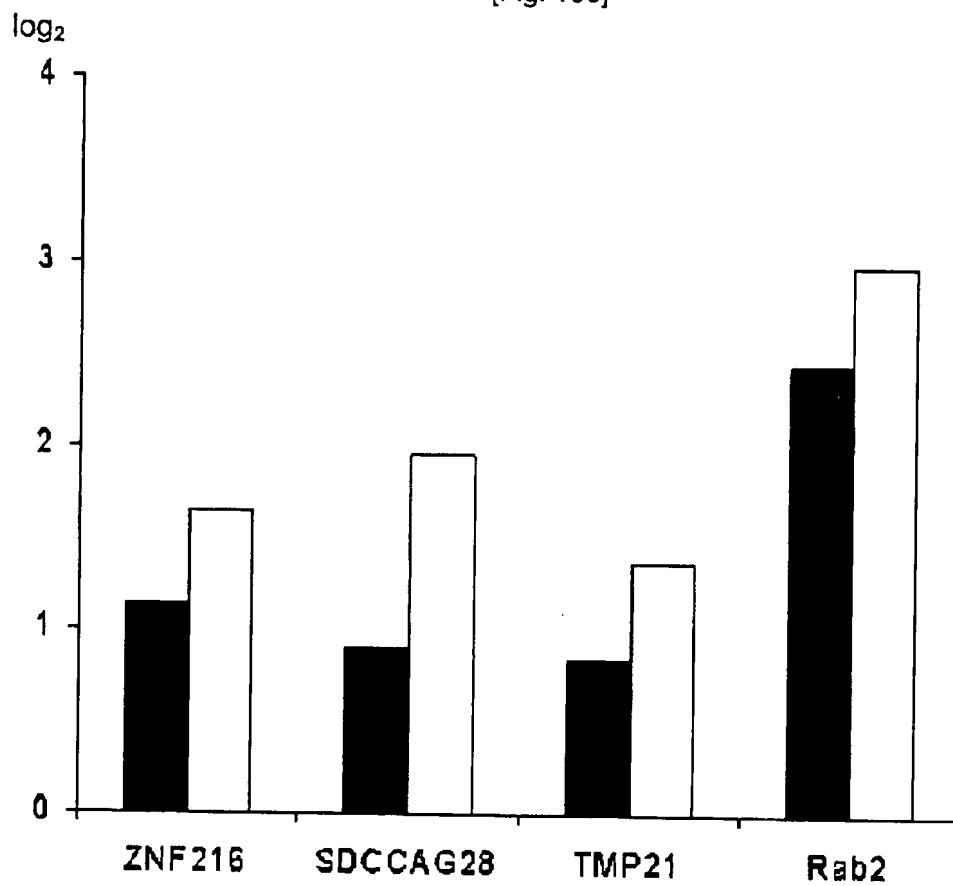




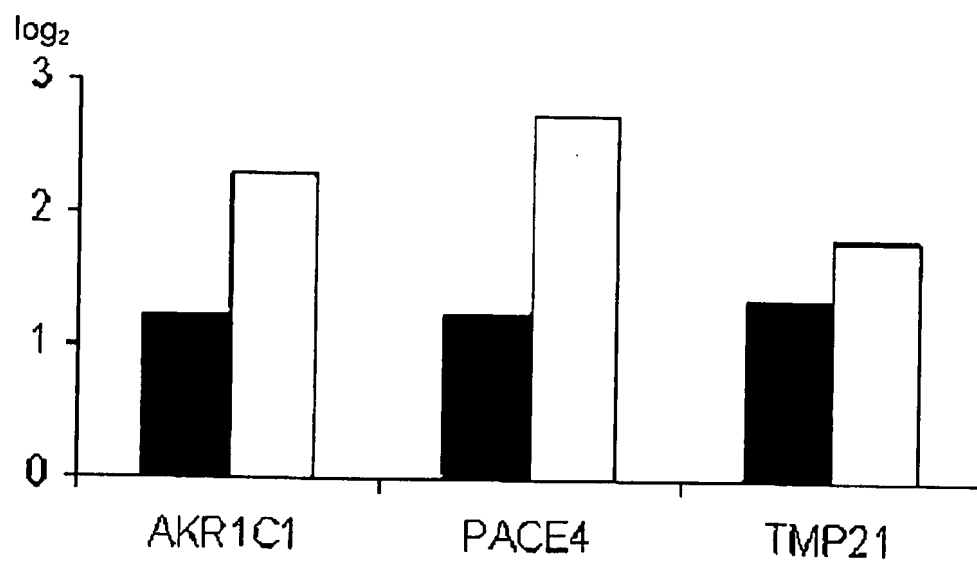
[Fig. 105]



[Fig. 106]

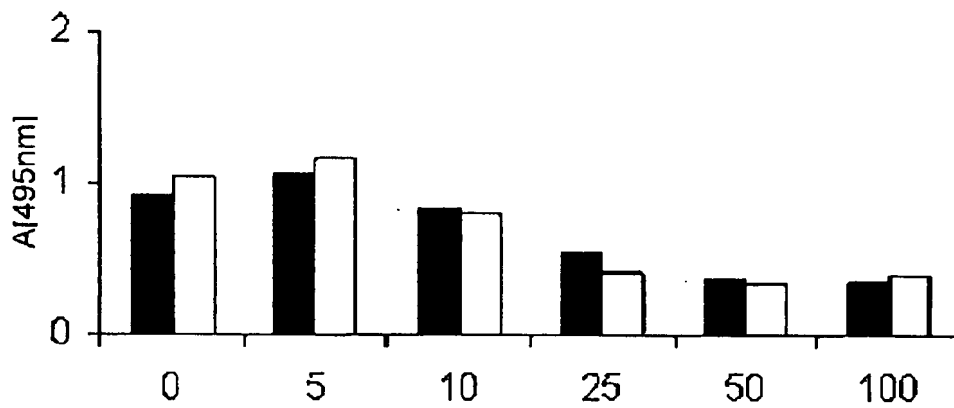


[Fig. 107]

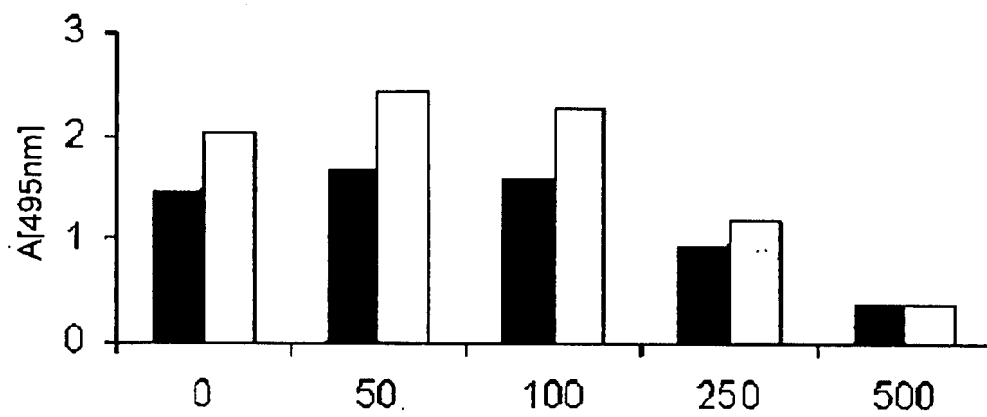


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[Fig. 108]



[Fig. 109]



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ccggctgca gagcagagat gtgcagccct ctggtcagct ggtccaggct ggtccccgcc  
3060

gtcccccttc cagtcagcc accaagagtc cacttgctcc gggcttccac ctggctgaca  
3120

gaagaattt ctgagagctg gatgtgcatg cctgtggac gaaggtacag ctgcctgcc  
3180

gccccaatc ccagccccga caatcacatg cagctgactc ggacactggc cttgggaaca  
3240

tggttcgaga gaacacttgc cccttgactg taggagccag aaggggaccc aggtgtgcat  
3300

gctctctgt agacattttt acccaaacct gttggtaaag tgcccatctg gtgctcaaga  
3360

agcctgggg gtctaacagg gagcccggt gcctcacctg gccacagcct ccacaccaga  
3420

ctccacatt gtcttgatcc agaccagctc tgtgatcaga aggaaattgg gtccagtgtg  
3480

gagagagct ggtcctgggc ctggcaggca agagtgtggg catcctttcc tggcctttct  
3540

cactctccc tcaagcctgt gctcaggttg ccttgaatgt ggactctgga agagccaggg  
3600

cccagaatg ccgggggagg cttctgagtg gcactcatgg aacaccgtcc ctctgccagc  
3660

ataggccct gcctccagtg tcagggaatg gaggctgggc tgcgagagtg ttgctgcccc  
3720

tgtgtcatt cttctaatacc aatgtagaaa ttgtacgtaa tgtatttaaa tcaacgcaaa  
3780

gtatgaata acaaatacag ttctgacctt ttttgtccag tttctttggg ggaaggaaga

eolf-seql-S000001.txt

3840

aaagaaggt aggaacggaa ttttgagggc aaagaaacct gtgtttccat ggaattgctg  
3900

gacgtggct cctggggcta tttctcccta ataaaggatg atccagggtcc tcatttccaa  
3960

gtcccaatg ctctgaaaac caaaagtatt ttcataaccc atttgaaacc aaacctgacc  
4020

gaacttaca ctgataggaa gctatgggta attatgatgt gttcctttta gtgtgattct  
4080

tgttgacaga aatgtcaata tatTTTTatga catggttccc tactagggat tatacagtat  
4140

tgctgacta cttcctaaga gccaaaaata aaaaatctga attcc  
4185

210&gt; 2

211&gt; 2425

212&gt; DNA

213&gt; Homo sapiens

400&gt; 2

cggcgcgcg gtcctccctc cacctcctcc tcggccccc ctcgcttccc tcctcccact  
60

cccagagctc cggcgtcgtc ccggccacgc tcgacgctgc tgcaggaaca aaggaagacc  
120

cgcggcggc ggcggcgcca cctccgctg ctgctccgac ccgctcccgg cccgcggcgg  
180

ggcaccagg gcgcccggct cagccttccc ggaggcctcg gcccggcctc atcgtgccgg  
240

ttcgcgcg gcgaaccggct ttcgcatTTg ggaccctgca ggaaaaatat ggctcaggag  
300

ctaaccaga ccccggggcc catgctgtgt agcacaggat gtggctttta tggaatcct  
360

ggacaaatg gaatgtgttc agtttgctac aaagaacatc ttcagaggca gcaaaatagt  
420

gcagaatga gcccaatggg gacagctagt ggttccaaca gtcctacctc agattctgca  
480

ctgtacaga gagcagacac tagcttaaac aactgtgaag gtgctgctgg cagcacatct  
540

aaaaatcaa gaaatgtgcc tgtggctgcc ttgcctgtaa ctcagcaaT gacagaaatg



eolf-seql-S000001.txt

600

gcatttcaa gagaggacaa aataactacc ccgaaaacag aggtgtcaga gccagttgtc  
660

ctcagccca gtccatcagt ttctcagccc agtacttctc agagtgaaga aaaagctcct  
720

aattgcccc aaccaaagaa aaacagatgt ttcattgtgca gaaagaaagt tggctcttaca  
780

ggtttgact gccgatgtgg aaatttgttt tgtggacttc accgttactc tgacaagcac  
840

actgtccgt atgattacaa agcagaagct gcagcaaaaa tcagaaaaga gaatccagtt  
900

ttgtggctg aaaaaattca gagaatataa attacttctt gtgaagagac tgaaactttg  
960

ttttatttt aatatatcgt aggaaaacat taaagagcag atgcatggcc atttttcttt  
1020

atgttctcc agagttttac attacacttg tctgtcttat aattgatatt ttaggatggt  
1080

gggtgtttg ttacaggcag aattggatag atacagccct acaaagtgtat atgccctccc  
1140

tgaaaaaaa ttggatgaaa atctgcacag caaagtgaaa cacacagata ataggaacaa  
1200

atgtagtcc ccatgtgcc aacaaaataa atgaaatctc tgcattgttg cagcatatct  
1260

ccttttggg aatgtaatca aggtataatc ttgggctagt gttatgtgcc tgtatttttt  
1320

aaaatggta caccagaaaa ggactggcag tctacttcta ccatagttaa acttcaccct  
1380

tttaatttc acaacatatt ctttgggaagc aggaagaaat gtcataaag aggatcagac  
1440

ttctttccc gtgaaaccag tatttggcgc catatataag cctgggttaaa ttggatcatc  
1500

agctgtca aataagacat tctgtgaaag gtaaacatcg aaactgggta taagtaaaac  
1560

ttcaagcca acaacagggt cttgagataa cctttgaagc ttattgtact ggcctgcacc  
1620

taagatgtc tgcattactc attgctaaaa atgtgtagca cagaactgca ctaggattaa  
1680

## eolf-seql-S000001.txt

ttgtttaca agaagaaatt taaactctac gtttggtttt cacatacagc agctctattg  
1740

ataacatgc atctgaattt taagttgcaa aggtatctga ataatttttc atgtgcatct  
1800

ttgtcgaat gttttggttc aagaaagaat gtttaaagct ttttaaaaga cttcagttct  
1860

aatgtaact gtacccttct gcatggaaaa tcataaccaa catggctgca gtagacttct  
1920

agtggatc cagcgccact tgcagagggc tgctttatca tattgtactt ggggtgtagga  
1980

tctagtgtt cttgggtgta ttgcatgggc tgcattatct acagcattgt acaataacaa  
2040

tagaaaagg cagtatactt cactgatgct tgtctggtaa taatcacttc tgtgttataa  
2100

ggaaggttt tttgtgatgt atgaaacttg tgttttttat atataaatga gtatagttag  
2160

gttgtggtg atgcctgttt tcactctgtaa atagttaagt atgtacacga ggcactactt  
2220

cgatttatt gcaatgttca gtcctagttt ttacttttat tcttaaagca ttcagttttg  
2280

tttcaattt tatgtacctt agttctgagt tagacctgca gatgtgtaca gatagttcat  
2340

tttatgtat tgcacataat catgctattc agcattgatg ctatattgta ttatgtaa  
2400

ataaaagcc atgtacagag ggaaa  
2425

?10> 3

?11> 1220

?12> DNA

?13> Homo sapiens

!00> 3

jccaggcta gtgacagaaa tggattcgaa atatcagtgt gtgaagctga atgatgggtca  
60

tcatgcct gtcctgggat ttggcaccta tgcgcctgca gaggttccta aaagtaaagc  
120

tagaggcc accaaattgg caattgaagc tggcttccgc catattgatt ctgctcattt  
180

## eolf-seql-S000001.txt

atacaataat gaggagcagg ttggactggc catccgaagc aagattgcag atggcagtgt  
240

jaagagagaa gacatattct acacttcaaa gctttggtgc aattcccatc gaccagagtt  
300

igtccgacca gccttggaag ggtcactgaa aaatcttcaa ttggattatg ttgacctcta  
360

cttattcat tttccagtgt ctgtaaagcc aggtgaggaa gtgatcccaa aagatgaaaa  
420

ggaaaaata ctatttgaca cagtggatct ctgtgccacg tgggaggccg tggagaagtg  
480

aaagatgca ggattggcca agtccatcgg ggtgtccaac ttcaaccgca ggcagctgga  
540

atgatcctc aacaagccag ggctcaagta caagcctgtc tgcaaccagg tggaatgtca  
600

ccttacttc aaccagagaa aactgctgga tttctgcaag tcaaaagaca ttgttctggt  
660

gcctatagt gctctgggat cccaccgaga agaaccatgg gtggaccoga actccccggt  
720

ctcttgag gaccagtc tttgtgcctt ggcaaaaaag cacaagcgaa cccagccct  
780

attgccctg cgctaccagc tacagcgtgg gggtgtggtc ctggccaaga gctacaatga  
840

cagcgcac agacagaacg tgcaggtgtt tgaattccag ttgacttcag aggagatgaa  
900

gcatagat ggcctaaaca gaaatgtgcg atatttgacc cttgatattt ttgctggccc  
960

cctaattat ccattttctg atgaatatta acatggaggg cattgcatga ggtctgccag  
1020

agccctgc gtgtggatgg tgacacagag gatggctcta tgctggtgac tggacacatc  
1080

cctctggtt aaatctctcc tgcttggtga tttcagcaag ctacagcaaa gccattggc  
1140

agaaaaaaa agacaataat ttgtttttt cattttgaaa aaattaaatg ctctctccta  
1200

agattcttc acctaaaaaa  
1220

## eolf-seql-S000001.txt

:210> 4  
:211> 1816  
:212> DNA  
:213> Homo sapiens

:400> 4  
ctgccttct ggctctgcc tgcctgctc tgaagagaca cccgccattt caccagtaa  
60  
cgggcccg cctgcggagg tgggcggcat gcagctccgc tttgccggc tctccgagca  
120  
gccacggcc cccacccggg gctccgcgcg cgccgcgggc tacgacctgt acagtgccta  
180  
gattacaca ataccaccta tggagaaagc tgttgtgaaa acggacattc agatagcgct  
240  
ccttctggg tgttatggaa gagtggctcc acggtcaggc ttggctgcaa aacactttat  
300  
gatgtagga gctgggtgtca tagatgaaga ttatagagga aatgttggtg ttgtactggt  
360  
aattttggc aaagaaaagt ttgaagtcaa aaaaggtgat cgaattgcac agctcatttg  
420  
gaacggatt ttttatccag aaatagaaga agttcaagcc ttggatgaca ccgaaagggg  
480  
tcaggaggt tttggttcca ctggaaagaa ttaaaattta tgccaagaac agaaaacaag  
540  
agtcatacc tttttcttaa aaaaaaaaaa aaagtttttg cttcaagtgt tttggtgttt  
600  
gcacttctg taaacttact agctttacct tctaaaagta ctgcattttt tacttttttt  
660  
atgatcaag gaaaagatcg ttaaaaaaaaa acacaaagaa gtttttcttt gtggttggtg  
720  
aaaaagaaa ctttgttttt ccgcaattga aggttgtatg taaatctgct ttgtggtgac  
780  
tgatgtaaa cagtgtcttc ttaaaatcaa atgtaaatca attacagatt aaaaaaaaaa  
840  
cctgtattt aactcatatg atctcccttc agcaacttat tttgctttaa ttgctttaa  
900  
cttaagcaa tattttttat tcagtaaaca aattctttca caaggtaaa aatcttgcat  
960

eolf-seql-S000001.txt

agctgaact aaaataaaaa tgaaaaggag agattaaagg tattccttgt tcttcccttc  
1020

cttcactag tctaaaaact tctttttaat cttaagattc tttgtgatga gggtgagaaa  
1080

agaatcctc agttttatfff tccactatta atctttcttt tgataaatcc tctattgact  
1140

ggtagaggt atgtttgtga aagacatgta acttggggat ttgttacttt aggtttgttc  
1200

cttgaattt catctcatca ggcaaattgt actagttgta gttacgagtt ttcctcagt  
1260

aagtagcaa taggctgtaa tcaagaaaat atgccattta tagagataag ataaatgaaa  
1320

aatacttca gccaccaggt ttttctgtct cacatacata agcagcattt cattgcagat  
1380

tgggactga ttctgtggct taccttgatt aacatctttt ggaagttttg ctagtgtgct  
1440

tcctttctt tactatgttt ctcagattcc tttgtatcag ggttttgggt gtcacttagg  
1500

tttgtccat cagattctgt gagacaccag gcatcgtttt gaggatgtgg gttatacaca  
1560

ggagtgtt ctggaactat cagcccactt gaccaccag tttgtggaag cacaggcaag  
1620

gtgttcttt tctgggtgatt ctccaggcca ttttaataccc tgcaatgtaa ttgtccctct  
1680

tggctcaca tttcattagt gagccatgaa atcaactcag tgggacatag ccagcatttt  
1740

gcataccag gttgggctat aaaatatttc tgttgtcaat aaattttaaa tgttttctg  
1800

taaaaaaaa aaaaaa  
1816

210> 5  
211> 4553  
212> DNA  
213> Homo sapiens

400> 5  
>gcgggccg aggacgcctc tggggcggca ccgcgtcccg agagccccag aagtcggcgg  
60

eolf-seql-S000001.txt

gaagttttcc ccggtggggg gcgtttcggg cctcccggac ggctctcggc cccggagccc  
120

gtcgcagga gcgcggggccc gggggcgggg acgcgcgcgc gccgcctcct cctccccggc  
180

cccgcccgc ggcggtgttg gcggcggcgc tggcggcggc ggcggcgctt ccccggcgcg  
240

agcggtttt aaaaggcggc actccacccc ccggcgcact cgcagctcgg gcgcgcgcgc  
300

gcctgtcgc cgctatgcct ccgcgcgcgc cgcctgcgcc cgggccccgg ccgccgcccc  
360

ggcgcgcgc gccaccgac accgcgcgcg gcgcgggggg cgcggggggc gcggggggcg  
420

cggcggggc cgggttcggc ccgctcgcgc cgcgtccctg gcgctggctg ctgctgctgg  
480

gctgcctgc cgcctgctcc gcgccccgc cgcgccccgt ctacaccaac cactgggcgg  
540

gcaagtgct ggcgggcccc gccgaggcgc accgcgtggc ggcggcgcac ggttacctca  
600

cttggggcca gattggaaac ctggaagatt actaccattt ttatcacagc aaaaccttta  
660

aagatcaac cttgagtagc agaggccctc acaccttcct cagaatggac cccaggtga  
720

atggctcca gcaacaggaa gtgaaacgaa gggatgaagag acaggtgcga agtgaccgc  
780

ggcccttta cttcaacgac ccattttggt ccaacatgtg gtacctgcat tgtggcgaca  
840

gaacagtcg ctgccggtcg gaaatgaatg tccaggcagc gtggaagagg ggctacacag  
900

aaaaaacgt ggtggtcacc atccttgatg atggcataga gagaaatcac cctgacctgg  
960

cccaaatta tgattcctac gccagctacg acgtgaacgg caatgattat gacctatctc  
1020

acgatatga tgccagcaat gaaaataaac acggcactcg ttgtgcggga gaagttgctg  
1080

ctcagcaaa caattcctac tgcctcgtgg gcatagcgta caatgccaaa ataggaggca  
1140

ccgcatgct ggacggcgat gtcacagatg tggtcgaggc aaagtcgctg ggcacagac

## eolf-seql-S000001.txt

1200

caactacat cgacatttac agtgccagct gggggccgga cgacgacggc aagacggtgg  
1260

cgggcccgg ccgactggct aagcaggctt tcgagtatgg cattaaaaag ggccggcagg  
1320

cctgggctc cattttcgtc tgggcatctg ggaatggcgg gagagagggg gactactgct  
1380

gtgcatgg ctacaccaac agcatctaca ccatctccgt cagcagcgcc accgagaatg  
1440

ctacaagcc ctggtacctg gaagagtgtg cctccaccct ggccaccacc tacagcagtg  
1500

ggcctttta tgagcgaaaa atcgtcacca cggatctgog tcagcgctgt accgatggcc  
1560

cactgggac ctacgtctct gccccatgg tggcgggcat catcgcttg gctctagaag  
1620

aaacagcca gttaacctgg agggacgtcc agcacctgct agtgaagaca tcccggccgg  
1680

ccacctgaa agcgagcgac tggaaagtga acggcgcggg tcataaagtt agccatttct  
1740

tggatttgg tttggtggac gcagaagctc tcgttgtgga ggcaaagaag tggacagcag  
1800

gccatcgca gcacatgtgt gtggccgcct cggacaagag acccaggagc atccccttag  
1860

gcaggtgct gcggactacg gccctgacca gcgcctgcgc ggagcactcg gaccagcggg  
1920

ggtctactt ggagcacgtg gtggttcgca cctccatctc acaccacgc cgaggagacc  
1980

ccagatcta cctggtttct ccctcgggaa ccaagtctca acttctggca aagaggttgc  
2040

ggatctttc caatgaaggg tttaaaact gggaaattcat gactgtccac tgctggggag  
2100

aaaggctga agggcagtgg accttggaat tccaagatct gccatcccag gtccgcaacc  
2160

ggagaagca agggaagttg aaagaatgga gcctcactat gtatggcaca gcagagcacc  
2220

gtaccacac cttcagtgcc catcagtccc gctcgcggat gctggagctc tcagccccag  
2280

## eolf-seql-S000001.txt

.gctggagcc acccaaggct gccctgtcac cctcccaggt ggaagttcct gaagatgagg  
2340

.agattacac agctcaatcc accccaggct ctgctaatat ttacagacc agtgtgtgcc  
2400

.tccggagtg tggtgacaaa ggctgtgatg gcccgaatgc agaccagtgc ttgaactgcg  
2460

ccacttcag cctggggagt gtcaagacca gcaggaagtg cgtgagtgtg tgccccttgg  
2520

ctactttgg ggacacagca gcaagacgct gtcgccggtg ccacaagggg tgtgagacct  
2580

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2640

gatgaacac ctgtgtgacc ctctgtcctg caggatttta tgctgatgaa agtcagaaaa  
2700

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2760

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2880

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2940

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3000

agtgtgtcg aaggtgtgac gagaactgct tgagctgtgc aggctccagc aggaactgta  
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cagggtgtaa gacgggcttc acacagctgg ggacctcctg catcaccaac cacacgtgca  
3120

caacgctga cgagacattc tgcgagatgg tgaagtccaa ccggctgtgc gaacggaagc  
3180

cttcattca gttctgctgc cgcacgtgcc tcctggccgg gtaagggtgc ctagctgccc  
3240

cagagggca ggcactccca tccatccatc cgtccacctt cctccagact gtcggccaga  
3300

tctgtttca ggagcggcgc cctgcacctg acagctttat ctccccagga gcagcatctc  
3360



eolf-seql-S000001.txt

gagcaccca agccaggtgg gtggtggctc ttaaggaggt gttcctaaaa tggatgatc  
3420

tctcaaattg ctgcttggtg gctccagtct tccgacaaac taacaggaac aaaatgaatt  
3480

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3540

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3600

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3660

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3780

agtatctat ttctacatag tcagctactt ctgaaactgc agcagtggct tagaaagtcc  
3840

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4020

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aatcatcca tcaattccca ttttatggaa ttgcttttaa aatacatttg gcctctgccc  
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4200

acacagttg gatttattct gccaaacctg tgtaggcatt ttataagcta catgttctaa  
4260

ttttaccga tgtaattat ttgacaaat atttcatata ttttcattga aatgcacaga  
4320

ctgcttgat caattccctt gaataggga gtaacatttg ccttaaattt tttcgacctc  
4380

tctttctcc atattgtctt gctccctgt ttgacgacag tgcatttgcc ttgtcacctg  
4440

gagctggag agaaccaga tgttgtttat tgaatctaca actctgaaag agaaatcaat

eolf-seql-S000001.txt

4500

jaagcaagta caatgttaac cctaaattaa taaaagagtt aacatcccat ggc  
4553

:210> 6  
:211> 2691  
:212> DNA  
:213> Homo sapiens

:400> 6  
jcttgcccg cggctcgctag ctgctcggt gcgctcgtc ccgctccatg gcgctcttcg  
60

gcggctgct ggctctcgcc ctggctctgg ccctggggccc cgccgcgacc ctggcgggtc  
120

cgccaagtc gccctaccag ctggtgctgc agcacagcag gctccggggc cgccagcacg  
180

ccccaacgt gtgtgctgtg cagaaggtta ttggcactaa taggaagtac ttcaccaact  
240

caagcagtg gtaccaaagg aaaatctgtg gcaaataaac agtcatacgc tacgagtgtc  
300

tcctggata tgaaaaggtc cctggggaga agggctgtcc agcagcccta ccactctcaa  
360

cctttacga gaccctggga gtcgttggt ccaccaccac tcagctgtac acggaccgca  
420

ggagaagct gaggcctgag atggaggggc ccggcagctt caccatcttc gcccttagca  
480

cgaggcctg ggccctcctg ccagctgaag tgctggactc cctggtcagc aatgtcaaca  
540

tgagctgct caatgccctc cgctaccata tggtagggcag gcgagtcctg actgatgagc  
600

gaaacacgg catgaccctc acctctatgt accagaattc caacatccag atccaccact  
660

tcctaattg gattgtaact gtgaactgtg cccggctcct gaaagccgac caccatgcaa  
720

caacggggg ggtgcacctc atcgataagg tcatactccac catcaccaac aacatccagc  
780

gatcattga gatcgaggac acctttgaga cccttcgggc tgctgtggct gcatcagggc  
840

caacacgat gcttgaagggt aacggccagt acacgctttt ggccccgacc aatgaggcct

eolf-seql-S000001.txt

900

cgagaagat ccctagttag actttgaacc gtatcctggg cgaccagaa gccctgagag  
960

cctgctgaa caaccacatc ttgaagtcag ctatgtgtgc tgaagccatc gttgcggggc  
1020

gtctgtaga gaccctggag ggcacgacac tggaggtggg ctgcagcggg gacatgctca  
1080

tatcaacgg gaaggcgatc atctccaata aagacatcct agccaccaac ggggtgatcc  
1140

ctacattga tgagctactc atcccagact cagccaagac actatttgaa ttggctgcag  
1200

gtctgatgt gtccacagcc attgaccttt tcagacaagc cggcctcggc aatcatctct  
1260

tggaagtga gcggttgacc ctctggctc cctgaattc tgtattcaaa gatggaaccc  
1320

tccaattga tgccataca aggaatttgc ttcggaacca cataattaaa gaccagctgg  
1380

ctctaagta tctgtaccat ggacagacc tggaaactct gggcggcaaa aaactgagag  
1440

ttttgttta tcgtaatagc ctctgcattg agaacagctg catcgcgggc cagacaaga  
1500

ggggaggta cgggaccctg ttcacgatgg accgggtgct gacccccca atggggactg  
1560

catggatgt cctgaaggga gacaatcgct ttagcatgct ggtagctgcc atccagtctg  
1620

aggactgac ggagaccctc aaccgggaag gagtctacac agtctttgct cccacaaatg  
1680

agccttccg agccctgcca ccaagagaac ggagcagact cttgggagat gccaaggaac  
1740

tgccaacat cctgaaatac cacattgggtg atgaaatcct ggtagcgga ggcacgggg  
1800

cctggtgcg gctaaagtct ctccaagggtg acaagctgga agtcagcttg aaaaacaatg  
1860

ggtgagtgt caacaaggag cctgttgccg agcctgacat catggccaca aatggcgtgg  
1920

ccatgtcat caccaatgtt ctgcagcctc cagccaacag acctcaggaa agaggggatg  
1980

## eolf-seql-S000001.txt

.acttgcaga ctctgcgctt gagatcttca aacaagcatc agcgttttcc agggctttccc  
2040

.gaggctctgt gcgactagcc cctgtctatc aaaagttatt agagaggatg aagcattagc  
2100

tgaagcact acaggaggaa tgcaccacgg cagctctccg ccaattttctc tcagattttcc  
2160

.cagagactg tttgaatggt ttcaaaacca agtatcacac tttaatgtac atgggccgca  
2220

cataatgag atgtgagcct tgtgcatgtg ggggaggagg gagagagatg tacttttttaa  
2280

tcagtgttcc ccctaaacat ggctgttaac ccactgcatg cagaaacttg gatgtcactg  
2340

ctgacattc acttccagag aggacctatc ccaaattgtgg aattgactgc ctatgccaaag  
2400

ccctggaaa aggagcttca gtattgtggg gctcataaaa catgaatcaa gcaatccagc  
2460

tcattgggaa gtcttggcac agttttttgta aagcccttgc acagctggag aaatggcatc  
2520

ttataagct atgagttgaa atgttctgtc aaatgtgtct cacatctaca cgtggcttgg  
2580

ggctttttat ggggccctgt ccaggtagaa aagaaatggt atgtagagct tagattttccc  
2640

attgtgaca gagccatggt gtgtttgtaa taataaaacc aaagaaacat a  
2691

210> 7

211> 3600

212> DNA

213> Homo sapiens

400> 7

gtggagctg tgcctagcc gctatcgag agtggagcgg ggctgggagc aaagcgctga  
60

ggagctcgg tacgccgccc cctcgcaccc gcagcctcgc gcccgccgcc gcccgctccc  
120

jagaacat ggagtctggc agtaccgccg ccagtgagga ggcacgcagc cttcgagaat  
180

cgagctcta cgtccagaag cataacattc aagcgctgct caaagattct attgtgcagt  
240

## eolf-seql-S000001.txt

gtgcactgc tcgacctgag agacccatgg cattcctcag ggaatacttt gagaggttgg  
300

gaaggagga ggcaaaacag attcagaatc tgcagaaagc aggcactcgt acagactcaa  
360

ggaggatga gattttctct cctccaccca acccagtggg taaaggtagg aggcgacgag  
420

tgctatcag cgctgagggtc tacacggagg aagatgcggc atcctatgtt agaaaggtta  
480

acaaaaga ttacaagaca atggccgctt tagccaaagc cattgaaaag aatgtgctgt  
540

ttcacatct tgatgataat gagagaagtg atatTTTTga tgccatgttt tcggtctcct  
600

tatcgcagg agagactgtg attcagcaag gtgatgaagg ggataacttc tatgtgattg  
660

tcaaggaga gacggatgtc tatgttaaca atgaatgggc aaccagtgtt ggggaaggag  
720

jagctttgg agaacttgct ttgatttatg gaacaccgag agcagccact gtcaaagcaa  
780

jacaaatgt gaaattgtgg ggcatcgacc gagacagcta tagaagaatc ctcatgggaa  
840

acactgag aaagcggaag atgtatgagg aattccttag taaagtctct attttagagt  
900

ctggacaa gtgggaacgt cttacggtag ctgatgcatt ggaaccagtg cagtttgaag  
960

gggcagaa gattgtggtg cagggagAAC caggggatga gttcttcatt attttagagg  
1020

tcagctgc tgtgctacaa cgtcggtcag aaaatgaaga gtttgttgaa gtgggaagat  
1080

gggccttc tgattatTTT ggtgaaattg cactactgat gaatcgtcct cgtgctgccA  
1140

gttggtgc tcgtggcccc ttgaagtgcg ttaagctgga ccgacctaga tttgaacgtg  
1200

cttgcccc atgctcagac atcctcaaac gaaacatcca gcagtacaac agttttgtgt  
1260

ctgtctgt ctgaaatctg cctcctgtgc ctcccttttc tcctctcccc aatccatgct  
1320

eolf-seql-S000001.txt

caactcatgc aaactgcttt attttcccta ctgcagcgc caagtggcca ctggcatcgc  
1380

gcttcctgt ctgtttatat attgaaagtt gcttttattg caccattttc aatttgagc  
1440

tttaactaaa tgctcataca cagttaaata aatagaaaga gttctatgga gactttgctg  
1500

tactgcttc tctttgtgca gtgtagtat tcacctggg cagtgagtg catgcttttt  
1560

gtgagggca gatcccagca cctattgaat taccatagag taatgatgta acagtgcaag  
1620

ttttttttt taagtgcacat aattgtccag ttataagcgt atttagactg tggccatata  
1680

gctgtattt ctttgtagaa taaatggttt ctcattaaac tctaaagatt agggaaaatg  
1740

atatagaaa atcttagtat agtagaaaga catctgctg taattaaact agtttaaggg  
1800

ggaaaaatg cccatttttg ctaattatca atgggatatg attggttcag ttttttttt  
1860

ccagagttg ttgtttgcca agctaactctg cctggtttta tttatatctt gttattaatg  
1920

ttcttctcc aattctgaaa tacttttgag tatggctatc tatacctgcc ttttaagttt  
1980

aaactaact catagattgc aaatattggt tagtatttaa ctacatctgc ctcggtcac  
2040

aattccgat tagaccttta tccagctagt gccaaataat tgatcagatg ctgaattgag  
2100

ataagaatt tgaggtctac attcttggtt gttaatttag agcgtttggt taaagtatgt  
2160

cttcagctg actccagtat aatctcctct gctcattaaa ctgattccag gagattggat  
2220

tgctgtgac tagatacaga tggagcaaat gtcctaacag agaaatagag gtgatgctgc  
2280

aaagggaga aatgccaggc ggacaaagtt cagtgtcggg aattttcccc gtgacattca  
2340

tggggcatg agattttgga agaagttttt tacttttggt tagtcttttt ttccttcctt  
2400

ttattcagc tagaatttct ggtgggttga tggtagggta taatgtgtct gtgttgcttc

eolf-seql-S000001.txt

2460

iaattggtct gaaaggctat cctgcggaaa gtcctgcttt cctatctagc atttatttct  
2520

:tggcaaaact tttctttctt ttctttttta aagtaaactt gtgtattgag tcttaactgt  
2580

tttcagtat tttccagcct tatgtgttac attattccaa tgatacccaa cagtttattt  
2640

.tattatttt tttaaacaaa atttcacagt tctgtaatgt aggcactttt attttcattg  
2700

.gatttatat ataaggtaat gtagggttat atttgggagt gactgcaagc atttttccat  
2760

:tgtgtgcaa ctaactgact ctgttattga tcccttctcc tgccctttcc caggtaattt  
2820

.aattgggtca tggtagattt ttttcataga ttgaaaaac ttttaggttg ttaccaagta  
2880

gaagtataa atctggggaa gaggttttat ttacatttta gggtaggtta gaaagccacc  
2940

tgttacaaa ttttttaatt tccaaaataa tctatattaa atgagggttt ctgatctgta  
3000

tttgtgttt agctaccttt ttatatattaa aaaattaaaa atgaaaatta cgttcttaca  
3060

gcttaaagc ttgatttgat ctttgtttaa atgccaaaat gtacttaaata gagttactta  
3120

aatgccata aaattgcagt ttcatgtatg tatataatca tgctcatgta tatttagtta  
3180

gtataatgc tttctgagtg agttttactc ttaaatacatt tggttaaatc atttggcttg  
3240

tgtttactc ctttctgtag tttttaatta aaaactttaa agataagtct acattaaaca  
3300

tgatcacat ctaaagcttt atcttttgtt aatctaagta tatgtgagaa atcagaattg  
3360

cataatttg tcttagttga tattcaaggc tttaaaagtc attattcctg ggcttggtta  
3420

tgaatttat gagatttact gctctagaaa gtatagatgg cgaaaggacc gttttgtatt  
3480

cttcctgat taccagtctg attataccat gtgtgctaata atactttttt tgttatagat  
3540

## eolf-seql-S000001.txt

gtcttaatg gtaggtcaag taataaaaag agatgaaata atttaaaaaa aaaaaaaaaa  
3600

:210> 8  
:211> 1434  
:212> DNA  
:213> Homo sapiens

:400> 8  
agccctgt ctggatgact tcttgcggt gttctacccc tccccctccc cgcggtacct  
60

gcacttttc tccctccctg cccccctctg agtccaccct ccgggccttc tgccccctgat  
120

gcttggttt tccttgcaat cgccctgctgc tgcgctcggg aggaaagatg aatgggaggg  
180

tgattttcg agagccgaat gcagagggtc caagaccaat tccccacata gggcctgatt  
240

cattccaac agaggaagaa aggagagtct tcgcagaatg caatgatgaa agcttctggt  
300

cagatctgt gcctttgggt gcaacaagta tggtgattac tcaaggatta attagtaaag  
360

aatactttc aagtcacccc aaatatggtt ccatccctaa acttatactt gcttgatatca  
420

gggatactt tgctggaaaa ctttcttatg tgaaaacttg ccaagagaaa ttcaagaaac  
480

tgaaaattc ccccccttga gaagctttac gatcaggaca agcacgacga tcttcaccac  
540

tgggcacta ttatcaaaag tcaaaatatg actcaagtgt gagtgggtcaa tcatcttttg  
600

gacatcccc agcagcagac aacatagaaa tgcttcctca ttatgagcca attccattca  
660

ttcttctat gaatgaatct gctcccactg gtattactga tcatattgtc caaggacctg  
720

tcccaacct tgaagaaagt cctaaaagaa aaaatattac atatgaggaa ttaaggaata  
780

gaacagaga gtcatatgaa gtatctttta caaaaagac tgacccctca gtcaggccta  
840

gcatgaaag agtgccaaaa aaagaagtca aagtaaacaa gtatggagat acttgggatg  
900



## eolf-seql-S000001.txt

gtgaaaaat tacatcattg gacatgaagg agtttcaaca tccagcttca tctaggtggt  
960  
atgattacc tgcattgcttt gagctcagca gcagtcttca taaacacatt taaaacaaga  
1020  
ctggggttt ttgtgggttg acttctatgg tgttttaaaa aaacacagat ttttagtggt  
1080  
atattgtgt aaatgtactc accttaggga ttcatttgaa tgatggtatt ataccatgat  
1140  
gtatacagt ttgtgaaatt gttgcaaggg caaagataac tcttaaaaaa ccgtcgagat  
1200  
acaatgctc tagaatcagc atataagaaa ataaatgata tctgcatggt gaattgggggt  
1260  
gatgggggg agcaagcata atttttaagt gtgaagcttt gcatcaagaa attattaaaa  
1320  
gttttttt ctccagtatt ttctgtatta tcttaatggt tatggcaaatt aaaatgtaa  
1380  
aacatgcc aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaa  
1434

?10> 9  
?11> 1414  
?12> DNA  
?13> Homo sapiens

100> 9  
gattgagga acccatttcc tcattctgca aattgcaaac ctgagggccc aaagagggac  
60  
gggcttgc caggtctcag caggctgtga gcaagagcta aagcctaata ctccctgcctt  
120  
ggctggag ccttccttgt accccagggt cagtgtcttt gttggatata ggcttagatt  
180  
ctgactgt accctgagaa cctaggggag tcctgttcc caattcttct cctaccccca  
240  
ttggcctg atggaggaag accctgctgt gttgagatga gcaccagagc caagaagctg  
300  
gaggatct ggagaattct ggaggaagag gagagtgttg ctggagctgt acagaccctg  
360  
tctcaggt cccaggaagg tggcgtcaca tctgcagccg cgtcgacgtt gtcggagcct  
420

## eolf-seql-S000001.txt

ccgcggagga cccaggagag ccggactagg accagggccc tgggcctccc cacactcccc  
480  
ctggagaagc tggcggcctc tacagagccc caagggcctc ggccggctct gggccgtgag  
540  
tgtgtccagg tgcccgatga ccaagacttt cgcagcttcc ggtcagagtg tgaggctgag  
600  
ctgggctgga acctgacctc tagcagggct ggggtgtctg tctgggtgca ggctgtggag  
660  
ctggatcgga cgctgcacaa gatcaagtgc cggatggagt gctgtgatgt gccagccgag  
720  
cactctacg acgtcctaca cgacattgag taccgcaaga aatgggacag caacgtcatt  
780  
agacttttg acatcgcccc cttgacagtc aacgtgacg tgggctatta ctctggagg  
840  
gtcccaagc ccctgaagaa ccgtgatgtc atcacctccc gctcctggct ccccatgggc  
900  
ctgattaca tcattatgaa ctactcagtc aaacatccca aatacccacc tcggaaagac  
960  
tggtcgag ctgtgtccat ccagacgggc tacctcatcc agagcacagg gcccaagagc  
1020  
gcgtcatca cctacctggc ccaggtggac cccaaaggct ccttaccxaa gtgggtggtg  
1080  
ataaatctt ctcagttcct ggctcccaag gccatgaaga agatgtacaa ggcgtgcctc  
1140  
agtaccccg agtggaaaca gaagcacctg cctcacttca agccgtggct gcacccggag  
1200  
agagcccg tgcgagcct ggcgctgtcg gagctgtcgg tgcagcatgc ggactcactg  
1260  
agaacatcg acgagagcgc ggtggccgag agcagagagg agcggatggg cggcgcgggc  
1320  
gcgagggca gcgacgacga cacctcgctc acctgagcga cgcaccgctt cagggacgga  
1380  
acaggaccg gcggagccct ggggcggcgg ccgc  
1414

210> 10  
211> 1262

eolf-seql-S000001.txt

:212&gt; DNA

:213&gt; Homo sapiens

:400&gt; 10

ictctcgca gatccctact ggctataaag gcagcgcccc ggagagctct tgcgcgtctt  
60

ttctttgcct ggtgtcgggtg gttagtttct gcgacttggtg ttgggactgg tgagtgtggg  
120

agtgcgggc cctgcggagt gaggcgcggc gcgcccttct tgctgttgc ctcttctcc  
180

cctgtccgg ggcccgcccg cgctcgggtg ggggtgctgt gatgcgtgag gcagccgggg  
240

aggccccga gtccgagact gcttgagcgc tgcgcacacc cctctcgtgg gccccccacg  
300

aggtgcggg aacctggttg aacccaagc tgataggaag atgtcttcag gaaatgctaa  
360

attgggcac cctgccccca acttcaaagc cacagctggt atgccagatg gtcagtttaa  
420

gatatcagc ctgtctgact acaaaggaaa atatgttggtg ttcttctttt accctcttga  
480

ttcaccttt gtgtgccccca cggagatcat tgctttcagt gatagggcag aagaatttaa  
540

aaactcaac tgccaagtga ttggtgcttc tgtggattct cacttctgtc atctagcatg  
600

gtcaataca cctaagaaac aaggaggact gggacccatg aacattcctt tggatatcaga  
660

ccgaagcgc accattgctc aggattatgg ggtcttaaag gctgatgaag gcattctggt  
720

aggggcctt tttatcattg atgataaggg tattcttcgg cagatcactg taaatgacct  
780

cctgttggc cgctctgtgg atgagacttt gagactagtt caggccttcc agttcactga  
840

aaacatggg gaagtgtgcc cagctggctg gaaacctggc agtgatacca tcaagcctga  
900

gtccaaaag agcaaagaat atttctccaa gcagaagtga gcgctgggct gttttagtgc  
960

aggctgcgg tgggcagcca tgagaacaaa acctcttctg tatttttttt ttccattagt  
1020

eolf-seql-S000001.txt

aaacacaag acttcagatt cagccgaatt gtggtgtctt acaaggcagg cctttcctac  
1080

gggggtgga gagaccagcc tttcttcctt tggtaggaat ggcctgagtt ggcgttgtgg  
1140

caggctact ggtttgtatg atgtattagt agagcaaccc attaatcttt tgtagtttgt  
1200

ttaaacttg aactgagacc ttgatgagtc tttaaaaaaa aaaaaaaaaa aaaaaaaaaa  
1260

a

1262

210&gt; 11

211&gt; 4108

212&gt; DNA

213&gt; Homo sapiens

400&gt; 11

ctccagcac catgtctggt ttgtctggcc caccagcccg gcgcggccct tttccgtag  
60

gttgctgct tttgttcctg ctcgcccca gattggctct tgccatctcc ttccatctgc  
120

cattaactc tcgcaagtgc ctccgtgagg agattcaca ggacctgcta gtgactggcg  
180

gtacgagat ctccgaccag tctgggggcg ctggcggcct gcgcagccac ctccaggatca  
240

agattctgc tggccatatt ctctactcca aagaggatgc aaccaagggg aaatttgctt  
300

taccactga agattatgac atgtttgaag tgtgttttga gagcaaggga acagggcgga  
360

acctgacca actcgtgatc ctagacatga agcatggagt ggaggcgaaa aattacgaag  
420

gattgcaaa agttgagaag ctcaaaccat tagaggtaga gctgcgacgc ctagaagacc  
480

ttcagaatc tattgttaat gattttgcct acatgaagaa gagagaagag gagatgcgtg  
540

taccaacga gtcaacaaac actcgggtcc tatacttcag catcttttca atgttctgtc  
600

cattggact agctacctgg caggtcttct acctgcgacg cttcttcaag gcccaagaat  
660

eolf-seql-S000001.txt

gattgagta atgaatgagg catattctcc tcccaccttg tacctcagcc agcagaacat  
720

gctgggacg tgcctggcct aaggcatcct accaacagca ccatcaaggc acgttggagc  
780

ttcttgcca gaactgatct cttttggtgt gggaggacat ggggtaccac ctacacccaa  
840

aagtcaatg agggacttct ttttaatttg gtaggatttt gactggtttt gcaacaatag  
900

tctattatt agagtcacct atgacaaaaa ataggggtta cctagataat gccaaagtca  
960

catttgctc cgggttcctt tgtgtgatct gtttggacta tgttttcttt tcttctccca  
1020

ttgctcagc agcttgggct tccattctag ttcttttacc aagatttttg tgtgaccatg  
1080

tgacttcat ttggattgcc ctctttcaat ttccttgtga aaacaccctt aactttctct  
1140

tacccttag ctgaaatgtt tacatagctt ctggtgatat cttttcatga ttttatatct  
1200

ttaaaatgg tgatggatgt gacacctcat aaaagtgagc tttgaactgt agataactct  
1260

aaagaaaat gtcatttttag acaattaaaa tatttgtgct caactgcttg aacttttttc  
1320

tgtatgtgt atttaattct atgcaatatt atcacatgtg tagattcatg tgaccaccat  
1380

acaagagac agaacagttc tgtcacatgg atcccttgca ctgccctttt acagccgcag  
1440

cacatcctt ttcttatacc ctcaccccaa cctgtggcta ccaactgttct gtcctccatc  
1500

ctgtaattt tgtcatttca agaatgttgt atgaatggaa tcatacagaa tgtaatctta  
1560

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1620

atgaatagt ttcttccttt ttttctttta aaaatgtttt atatatttag ggggtataag  
1680

acagatttc ttacatgcat atattgcac gtggtgaagt gggggcagtt ctttttgatt  
1740

ctgagtagt attccatggg atggatgtac cacagtttgc ttaaccattc acccactaaa

## eolf-seql-S000001.txt

1800

gacataaga gttgttttca gttttttgcc ctaataaagc tgctgtgaac attcatgtac  
1860

ggtttttat gtgaacatac attttcattt tctgggataa atgctcaaaa gggcaactgt  
1920

gggttgat ggtaaacaca tatatttttg taagaaacta ccctactctt tttccagagt  
1980

gctctactt tttacatata gccactcata caattcagac agcaatgtat gattgatcca  
2040

tttcttcac atcctcacca gcatttggtt ttactactat tttttatctt aaccattcac  
2100

tagatgtgt gtaatgatac cacatgtggt ttttaattgc atttccaatg gctaatgatg  
2160

tgagtatct ttttgtgtgc taatttgcca tctatgtatc ctcttcggtg aaatgtcttc  
2220

tgtcttttg tctattttct atttaggtca tttgttcttt ttactattga gttttgagag  
2280

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2340

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2400

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2460

catcgaggg ccattaagag agtaaatact taaaaataca tgttatgaaa gcaaagccaa  
2520

aatcactgt aggagtatga gttgcctaag ggccaaaact aatgtaaata agagaaagtg  
2580

ggatataaa tgaccattgt ttataaacag tcatgaaaaa tgctgtgact tgaaatcttt  
2640

ccacatctc ccaagaaagt aggtaggagt ttatcctttc cgtaatctct ttttaaccct  
2700

ctgactatt acagggttg tttaatcaca gtggcaagaa ttacatgtat cttacagtaa  
2760

jaaacagaa tactggaatc gttagagaac cctgatgtgt tgacctggat aaagtacaaa  
2820

gtggaagag ggaatgagtt atgctgttaa aatctcaggc tattctgtta atgttcctgc  
2880

## eolf-seql-S000001.txt

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2940

cataaaagt agttctgtcg ttaacttgta caacattgcc atctgctggt gagaattggt  
3000

ggtactgct tctgagaacc tggctgcaga tccttagcat aggcagcaaa tgttgagaaa  
3060

tctatctgt agtattacat atactaagtt acagaggatg catccaagta gagaaaataa  
3120

atgtgggtt aagatacatc cttaaacttt tttttttttg gggggggggg ggacggagtc  
3180

tgctgcaac gcccaggctg gaggcgcaatg gcactatctc agctcgctgc aaccttcacc  
3240

cctgggttc aagcaattct cctgcctcag cctcctgagt agctgggaat ataggtgcac  
3300

ccaccatgc ctggctaatt tttgtatttt cagtagaagc agagtttcac catattggcc  
3360

ggttggtct cgaactcctg acctcaagtg atctgcctgc ctgagcctcc caaagtgtg  
3420

gattacacg cgtgagccac cacaccagc ctccatcttt aaacttttaa atgtggaatt  
3480

ctatcatgt accgttagcc taacaagatt ttctttccta tttctgactg gtgcctttcc  
3540

ctttttagg agcaacgaaa gctactctct tagttatgtt cttgtgatgt gacaaaatgt  
3600

aagaagata ggagaagaga atattttatt tcgttgatgc ttttgttccc aagtgtgacc  
3660

taaacttaa gctttgtagg agttgacatt ctttcatgtc ctttcccttt actcatgccg  
3720

aactatcaa ctgggacatt ttgtgctttt ggtttaaaag ttaattgata ttatactttg  
3780

tttatcta aaaagtaa atgtattgcct ttgacaaaag actgacacaa gagcaaataa  
3840

ttttaa atcggtgttat gtgctttcct ccatttttga gcatattatc caaaatggtc  
3900

gtataatat aaatgagaat gatgcagttt aagtaagcct tggtatacca ttgtcatgga  
3960

eolf-seql-S000001.txt

ccctgtcat aaagccattt cttggtttgt ttgggaaaga ggcataatggg atttatacag  
4020

ttcacttgt aaatgttgga ttggggattt ttgtgtaaata tttctcaaata aaaggctagc  
4080

gaaaccgaa aaaaaaaaaa aaaaaaaaaa  
4108

210> 12  
211> 5767  
212> DNA  
213> Homo sapiens

400> 12  
agggaggag agttcacttt tactttcagtgc tcagcgcgcgc gcggccgtgg ctggctctgg  
60

gagagagca ccgagggagc gggtcgcaga tcttcgggcgc gctaggggaa atcggcgaga  
120

gcgggatcc gagcgcgcgc gcggggcgca gagcccgca gcctggccag cgagggtagc  
180

gcggggggc gcgccccggc cgggccccgc gagacgcgc ggatgccaca cgaagagctg  
240

cgtcgctgc agagaccgcg ctatggctct attgtggacg atgaaaggct ctctgcagag  
300

agatggatg agaggaggcg gcagaacatt gcttatgaat atctgtgcca ctagaggaa  
360

ccaaaaggc ggatggaagt ttgcttagtt gaagaattgc caccaaccac tgaattggaa  
420

aagggtcc ggaatggagt ttaccttgca aagttagcca agttctttgc ccgaaaatg  
480

tatcagaga aaaagatcta tgatgtggaa caaacacgtt ataagaagtc tggccttcac  
540

ttcgacaca cagataatac cgtccagtgg ttaagagcga tggagtctat tggcttacc  
600

agatatttt atccagaaac aacagatgtc tatgatcgga aaaacatacc aagaatgata  
660

attgcattc acgcactgag tttgtatctg ttcaaactag gaatagcacc ccagatccag  
720

atttgttg gcaaagtaga cttcacagag gaggaaatca gtaatatgag aaaagaactt  
780



eolf-seql-S000001.txt

agaaatatg gaatacagat gccatctttc agcaaaatag gtggtattct ggccaatgaa  
840

tgtccgtgg atgaagctgc attacatgct gcagttatag ccattaatga agcagttgaa  
900

aaggaatag cagagcaaac cgttgtaaca ctaagaaacc caaatgcggt tttaacttta  
960

tggatgaca accttgcacc agaatatcag aaagaactct gggatgccaa aaagaaaaaa  
1020

aggaaaatg caagactgaa gaatagctgt atttcagaag aagaaagaga tgcttatgaa  
1080

aactgctga cacaagcaga aatccaaggc aatattaata aagtcaacag gcaggctgca  
1140

ggaccata tcaatgctgt cattccggaa ggtgaccccg agaatacgct gcttgcactg  
1200

agaaccag aggcccagct gcctgctgtt tatccctttg ctgctgccat gtatcagaac  
1260

aacttttca acctccagaa acagaacacc atgaactact tggcccacga ggagcttttg  
1320

tgctgtgg aaatgttgct tgctgttgct ttactaaacc aggccttgga aagcaacgat  
1380

tggtgtctg tgcagaatca actcagaagc cccgcaatag gcttaaacaa tctggacaag  
1440

atattgtgg aacgttatgc aaacacacta ctctctgtta aactagaagt tttatcccaa  
1500

gcaagata acttaagctg gaatgaaatt cagaattgta ttgatatggt taatgctcaa  
1560

tcaagaag aaaatgaccg agttgtagct gtagggatca tcaatgaagc tattgatgaa  
1620

gaatcctt tgaggacttt agaaactttg ctctaccta ctgcgaatat tagtgatgtg  
1680

cccgagcc atgcccagca ctaccaggat gttttataacc atgctaaatc acagaaactc  
1740

agactctg agagtgtttc caaagtgctt tggctggatg agatacagca agccgtcgat  
1800

ggccaacg tggacgagga cagagcaaaa caatgggtta ctctgggtgtg tgatgttaat  
1860

gtgttttg aaggaaaaaa atcaagtgat atttgtctg tattgaagtc ttccacttct

## eolf-seql-S000001.txt

1920

atgcaaatg acataatccc ggagtgtgct gacaaatact atgatgccct tgtgaaggca  
1980

aagagctca aatctgaaag agtgtctagt gacggttcat ggctcaaact caacctgcac  
2040

aaaaatatg actactatta caacactgat tcaaaagaga gttcctgggt cacacctgaa  
2100

catgcttct ataaagaatc atggctcaca ggaaaagaaa tcgaggacat tattgaggaa  
2160

tcacagtag gttacattcg tgagaatata tggctctgctt cagaagagtt gcttcttcgc  
2220

ttcaagcca caagctcagg acccatcctt aggggaagagt ttgaagctag aaaatcattt  
2280

tgcataaac aagaagagaa tgtgggtcaaa atacaggctt tttggaaagg atataaacia  
2340

ggaaggagt atatgcacag gcggcaaacg ttcattgata atactgattc tgttgtgaag  
2400

ttcagtcct ggttccgaat ggcaactgca agaaagagct atctttcaag actacagtat  
2460

tcagagatc ataataatga aattgtgaaa atacagtcac tgttgagagc gaacaaagct  
2520

gagatgact acaaaacatt ggttggctct gaaaaccac cattaacagt aattcgcaaa  
2580

ttgtatacc tgctggacca aagtgatttg gatttccagg aggaactaga ggttgcacga  
2640

taagggaag aagtagtgac caagatcagg gccaatcaac agctggaaaa agacctgaac  
2700

tgatggaca tcaagattgg actgctggtg aagaacagga tcacactaga ggatgtaatt  
2760

tcacacagta aaaagctgaa caagaaaaaa ggaggagaaa tggaaatact gaataacacc  
2820

tcaaccaag gaataaaaag tttgagtaag gagaggagaa aaacactaga aacatatcag  
2880

tgctgtttt accttttaca gaccaaccct ttatacttgg ctaagctgat tttccagatg  
2940

tcacagaaca agtccactaa atttatggat actgttattt tcacactata taattatgcc  
3000

## eolf-seql-S000001.txt

taatcagc gagaagaata tctacttctc aagcttttta aaactgctct ggaggaagaa  
3060

aaaatcaa aagtggacca ggtacaggac atagttactg gtaaccctac agtcatcaag  
3120

ggtcgtca gcttcaatag aggtgcccgg ggacagaaca cctgcgcca actcctggct  
3180

agtggtaa aagagatcat cgacgacaag tcgctgatta tcaacacaaa cctgtagag  
3240

gtacaagg cttgggtgaa ccaactagaa acacagactg gagaggccag caagttgcct  
3300

tgatgtga ccacagaaca agctctaaca taccagaag tgaaaaataa actggaggct  
3360

cattgaga acctgagaag ggtcaccgac aaagtcctga attctatcat ttcttcctt  
3420

tctactgc cttatggatt gaggtatata gccaaagtac tgaagaattc gatccatgag  
3480

attccccg atgcaacaga agatgagcta ttaaagattg ttggaaacct cctgtactat  
3540

gtacatga atccagccat tgtagctcca gatggctttg atatcatcga catgacagct  
3600

aggtcaga taaattctga ccaaaggaga aacttaggat cagtggccaa ggttcttcag  
3660

cgcagcct ccaacaagct gtttgaagga gaaaatgagc atctctcatc tatgaacaat  
3720

tttatcag agacgtatca ggaattcagg aaatatttca aagaagcatg taatgtccct  
3780

gccagaag agaagtttaa tatggacaaa tacacagacc tggtgacagt cagcaaacca  
3840

catttata tttcaattga agaaatcatc agcacacact cactcctgtt ggaacaccag  
3900

tgcaattg ccctgagaa aaatgactta ctgagtgaat tgctggggtc gctgggagag  
3960

gccaaccg tggaatcttt tcttggggaa ggagcagttg accccaatga ccctaacaag  
4020

aaatacac taagtcagct ttcaaagacc gagatttctc ttgtcttgac aagcaaatat  
4080

eolf-seql-S000001.txt

acatagagg acggtgaagc tatagatagc cgaagcctca tgataaagac caagaagctg  
4140

taattgatg tgatccggaa ccagccaggg aacacattga cagaaatctt agagacacca  
4200

caactgcmc aacaggaggt agaccatgcc acggacatgg tgagccgtgc aatgatagat  
4260

ccaggactc cagaagaaat gaagcatagc caatctatga ttgaagatgc acagctgcct  
4320

ttgagcaga agaagaggaa aatccagagg aatcttcgga cgttggaaaca gactggacac  
4380

tgtcatccg aaaataaata ccaagacatt ctcaatgaga ttgccaagga tattcgaaat  
4440

aaagaatct atcgtaagct tcgaaaagct gaattggcaa aacttcagca gaccctgaat  
4500

cacttaaca agaaggcagc attttatgaa gagcaaatac attattatga cacctacata  
4560

agacttggt tagacaactt aaaaagaaaa aatactcgga gatcaattaa actagatgga  
4620

aaggagaac ccaaaggggc gaagagagcg aagccagtga agtacactgc agcaaagctg  
4680

atgagaaag gtgtcctgct agatatagat gatcttcaaa caaaccagtt taagaatggt  
4740

catttgata tcatagctac tgaagatgta ggcattttcg atgtaagatc aaaattcctt  
4800

gtgttgaga tggaaaaggt gcaactcaat attcaggatt tacttcagat gcaatatgaa  
4860

jagtagctg taatgaaaat gtttgataag gttaaagtga atgtaaacct tctcatatac  
4920

:gctgaaca agaagttcta tggaaagtga agtgcctaca gaaatttctt ggattctgta  
4980

:atctggat taggaaatga atttgtttaa tatttttggt tttaaactg attgaaatca  
5040

:gcttataa atgtgtgatt ttttttaaata gacaaaaact gttctgaaga atgtaccag  
5100

:gccttttt gctaatttga tactataata gaatgagaca taaaatgaat taatggaaac  
5160

:atccacac tgtactgtga tataggtact ctgatttaaa actttggaca tctgtgac

eolf-seql-S000001.txt

5220

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5280

cctatgaaa aaagttttaa .atgtcccact tgaataacgt aattcttcat agttttttta  
5340

tctatggat aaatggaaac ctaattattt gtaatgaatt atttagacag ttctaagccc  
5400

gtcttctgg gagttatcaa ttttaaagag aacttttgtg caattcaaat gaagttttta  
5460

aagtaattg aaaatgacaa cacaataaca ctttctgtat aaaagtatat attttatgtg  
5520

tttattcct actaaatgaa agtgcactac tgcctcatgt aaagactctt gcacgcagag  
5580

ctttaagtg actaaggaac aacatagata gtgagcatag tccccacctc caccctcac  
5640

atttatttg aataacttcaa ttgtgcctct caattttttg taatgctaaa aaatcagtat  
5700

tagatgggt tttaaatgta ttctctggaa attgttttat gtaaaataaa tgttacttaa  
5760

tccatt  
5767

210> 13  
211> 1148  
212> DNA  
213> Homo sapiens

400> 13  
ctcggtcgg gcgctgtctc cctcggctct gcgggtgtca gttcgtccgg cttectcaca  
60

cccctcact cccggcggct gacagcagca gcggcggcgg cgggcggcgc ctggcgtttc  
120

aggctgagc ggcaccgggg ttggggcgcg gaggaggagc agcagcggga ggaggagccg  
180

gtgccctgg cactgagcgg ccgcggccat ggcgtacgcc tatctcttca agtacatcat  
240

atcggcgac acaggtgttg gtaaatcatg cttattgcta cagtttacag acaagaggtt  
300

cagccagtg catgacctta ctattggtgt agagttcggg gctcgaatga taactattga

eolf-seql-S000001.txt

360

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420

acaaggtcg tattacagag gtgcagcagg agctttacta gtttacgata ttacacggag  
480

gatacattc aaccacttga caacctgggtt agaagatgcc cgccagcatt ccaattccaa  
540

atgggtcatt atgcttattg gaaataaaag tgatttagaa tctagaagag aagtaaaaaa  
600

gaagaaggt gaagcttttg cacgagaaca tggactcatc ttcattggaaa cgtctgctaa  
660

actgcttcc aatgtagaag aggcatttat taatacagca aaagaaattt atgaaaaaat  
720

caagaagga gtctttgaca ttaataatga ggcaaatggc attaaaattg gccctcagca  
780

gctgctacc aatgcaacac atgcaggcaa tcaggaggga cagcaggctg ggggcggctg  
840

tgttgagtc tgtttttact gtctagctgc ccaacggggc ctactcactt attctttcac  
900

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960

actttaatc cgtcaaattc ttgtataact ttgaataaat ggtaaatgtt cacttaaaag  
1020

cagattttg gagattgtat tcatatctat ttgcatttga tttctaggctc aattgatgtg  
1080

ttatttttg ttaaattgtg tcttggtgcc ttaactacga actgaattgt attaaacact  
1140

caaagtc  
1148

210&gt; 14

211&gt; 1814

212&gt; DNA

213&gt; Homo sapiens

400&gt; 14

caaaaccaa cgcttggtc ggagcagcag cctctgaggt gtcctggcc agtgccttc  
60

acctgtcca caagcatggg gaacatcttc gccaacctct tcaaggcct ttttgcaaa

eolf-seql-S000001.txt

120

aagaaatgc gcacccatcat ggtgggcctg gatgctgcag ggaagaccac gatcctctac  
180

agcttaagc tgggtgagat cgtgaccacc attcccacca taggcttcaa cgtggaaacc  
240

tggagtaca agaacatcag cttcactgtg tgggacgtgg gtggccagga caagatccgg  
300

ccctgtggc gccactactt ccagaacaca caaggcctga tcttcgtggt ggacagcaat  
360

acagagagc gtgtgaacga ggcccgtgag gagctcatga ggatgctggc cgaggacgag  
420

tccgggatg ctgtcctcct ggtgttcgcc aacaagcagg acctcccaa cgccatgaat  
480

cggccgaga tcacagacaa gctggggctg cactcactac gccacaggaa ctggtacatt  
540

agccacct gcgccaccag cggcgacggg ctctatgaag gactggactg gctgtccaat  
600

agctccgga accagaagtg aacgcgaccc ccctccctct cactcctctt gccctctgct  
660

cactctcat gtggcaaacg tgcggctcgt ggtgtgagtg ccagaagctg cctccgtggt  
720

cggtcaccg tgtgcatcgc accgtgctgt aaatgtggca gacgcagcct gcggccaggc  
780

ctttattta atgtaaatag tttttgtttc caatgaggca gtttctggta ctccatgca  
840

cattactca gcttttttta ttgtaaaaag aaaaatcaac tcactgttca gtgctgagag  
900

ggatgtagg cccatgggca cctggcctcc aggagtcgct gtgttgggag agccggccac  
960

ccttggtc tagagctgtg ttgaaatcca ttttggtggt tggttttaac ccaaactcag  
1020

catattttt aaaatagtta agaatccaag tcgagaacac ttgaacacac agaagggaga  
1080

ccgcctag catagatttg cagttacggc ctggatgcca gtcgccagcc cagctgttcc  
1140

tcgggaac atgaggtggt ggtggcgag cagactgcga tcaattctgc atggtcacag  
1200

## eolf-seql-S000001.txt

agagatccc cgcaactcgc ttgtccttgg gtcaccctgc attccatagc catgtgcttg  
1260

ccctgtgct cccacggttc ccaggggcca ggctgggagc ccacagccac ccactatgc  
1320

gcaggccgc cctaccaccc ttcaggcagc ctatgggacg caggcccccatt ctgtccctcg  
1380

ccgcgtgt ggccagagtg gtccgtcgtc cccaacactc gtgctcgtc agacactttg  
1440

aggatgtc tggggcctca ccagcaggag cgcgtgcaag ccgggcaggc ggtccaccta  
1500

accacagc ccctcgggag caccaccact ctgtgtgtga tgtagctttc tctccctcag  
1560

tgcaaggg tccgatttgc catcgaaaaa gacaacctct acttttttct tttgtatttt  
1620

ataaacact gaagctggag ctgttaaatt tatcttgggg aaacctcaga actggtctat  
1680

gggtgtcgt aggaacctct tactgctttc aatacacgat tagtaatcaa ctgttttgta  
1740

acttgtttt cagttttcat ttcgacaaac aagcactgta attatagcta ttagaataaa  
1800

ctctttaac tatt  
1814

!10> 15

!11> 2912

!12> DNA

!13> Homo sapiens

!00> 15

gttgcttc agcgtcccgg tgtggctgtg ccgttggtcc tgtgcgggtca cttagccaag  
60

gcctgagg aaaccagac ccaagaccaa ccgatggagg aggaggaggt tgagacgttc  
120

ctttcagg cagaaattgc ccagttgatg tcattgatca tcaatacttt ctactcgaac  
180

agagatct ttctgagaga gctcatttca aattcatcag atgcattgga caaaatccgg  
240

tgaaactt tgacagatcc cagtaaatta gactctggga aagagctgca tattaacctt  
300



## eolf-seql-S000001.txt

taccgaaca aacaagatcg aactctcact attgtggata ctggaattgg aatgaccaag  
360

ctgacttga tcaataacct tgggtactatc gccaaagtctg ggaccaaagc gttcatggaa  
420

ctttgcagg ctggtgcaga tatctctatg attggccagt tcggtggttg tttttattct  
480

cttatttgg ttgctgagaa agtaactgtg atcaccaaac ataacgatga tgagcagtac  
540

cttgggagt cctcagcagg gggatcattc acagtgagga cagacacagg tgaacctatg  
600

gtcgtggaa caaaagttat cctacacctg aaagaagacc aaactgagta cttggaggaa  
660

gaagaataa aggagattgt gaagaaacat tctcagttta ttggatatcc cattactctt  
720

ctgtggaga aggaacgtga taaagaagta agcgatgatg aggctgaaga aaaggaagac  
780

agaagaag aaaaagaaaa agaagagaaa gagtcggaag acaaacctga aattgaagat  
840

ctggttctg atgaggaaga agaaaagaag gatggtgaca agaagaagaa gaagaagatt  
900

aggaaaagt acatcgatca agaagagctc aacaaaacaa agcccatctg gaccagaaat  
960

ccgacgata ttactaatga ggagtacgga gaattctata agagcttgac caatgactgg  
1020

agatcact tggcagtga gcatTTTTca gttgaaggac agttggaatt cagagccctt  
1080

atttgtcc cagcagctgc tccttttgat ctgtttgaaa acagaaagaa aaagaacaat  
1140

caaatgt atgtacgcag agttttcatc atggataact gtgaggagct aatccctgaa  
1200

ctctgaact tcattagagg ggtggtagac tcggaggatc tcctctaaa catatcccgt  
1260

gatgttgc acaaagcaa aattttgaaa gttatcagga agaatttggc caaaaaatgc  
1320

agaactct ttactgaact ggcggaagat aaagagaact acaagaaatt ctatgagcag  
1380

eolf-seql-S000001.txt

ctcttaaaa acataaagct tggaatacac gaagactctc aaaatcggaa gaagctttca  
1440

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1500

gcaccagaa tgaaggagaa ccagaaacat atctattata tcacaggtga gaccaaggac  
1560

aggtagcta actcagcctt tgtggaacgt cttcggaac atggcttaga agtgatctat  
1620

tgattgagc ccattgatga gtactgtgtc caacagctga aggaatttga ggggaagact  
1680

tgtgtcag tcaccaaaga aggcttgaa cttccagagg atgaagaaga gaaaaagaag  
1740

aggaagaga aaaaaacaaa gtttgagaac ctctgcaaaa tcatgaaaga catattggag  
1800

aaaagttg aaaaggtggt tgtgtcaaac cgattggtga catctccatg ctgtattgtc  
1860

gaagcacat atggctggac agcaaacatg gagagaatca tgaaagctca agccctaaga  
1920

caactcaa caatgggtta catggcagca aagaaacacc tggagataaa ccctgaccat  
1980

scattattg agaccttaag gcaaaaggca gaggctgata agaacgacaa gtctgtgaag  
2040

ctctggtca tcttgcttta tgaaactgcg ctctgtctt ctggcttcag tctggaagat  
2100

ccagacac atgctaacag gatctacagg atgatcaaac ttggctctggg tattgatgaa  
2160

tgacccta ctgctgatga taccagtgtc gctgtaactg aagaaatgcc accccttgaa  
2220

agatgacg acacatcacg catggaagaa gtagactaat ctctggctga gggatgactt  
2280

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2340

tgtaata ttaaaaagtc tgtatggcat gacaactact ttaaggggaa gataagattt  
2400

gtctacta agtgatgctg tgatacctta ggcactaaag cagagctagt aatgcttttt  
2460

gtttcatg ttggttcttt cacagatggg gtaacgtgca ctgtaagacg tatgtaacat

eolf-seql-S000001.txt

2520

atgttaact ttgtgtggtc taaagtgttt agctgtcaag ccg gatgcct aagtagacca  
2580

atcttgta ttgaagtgtt ctgagctgta tcttgatgtt tagaaaagta ttcgttacat  
2640

ctgtaggat ctactttttg aacttttcat tccctgtagt tgacaattct gcatgtacta  
2700

ccctctaga aatagggttaa actgaagcaa cttgatggaa ggatctctcc acagggcttg  
2760

ttccaaag aaaagtattg ttggaggag caaagttaaa agcctaccta agcatatcgt  
2820

agctgttc aaatactcga gcccagtcct gtggatggaa atgtagtgct cgagtcacat  
2880

tgcttaaa gttgtaacaa atacagatga gt  
2912

!10&gt; 16

!11&gt; 3369

!12&gt; DNA

!13&gt; Homo sapiens

!00&gt; 16

ttttcagg agcccgagcg agggcgccgc ttttgcgtcc gggaggagcc aaccgtggcg  
60

ggcgccgc ggggagggcg cccagagtct cactctgccg cccaggctgg actgcagtga  
120

caatctcg gctgactgca accactgcct ccagggttca agcgattctc ttgcctcagc  
180

cccaagta gctgggatta cagattgatg ttcattgtcc tggcactact acaagattca  
240

ctcctgat gctactgaca acgtggcttc tccacagtca ccaaaccagg gatgctatac  
300

gacttccc tactctcatc tgctccagcc cctgacctt atagttgccc agctttcctg  
360

aatgact ttgccatca atacacagga ttagcatcc agggaagatg tcggagcctc  
420

atgttaat tttctaattg agaatgttgg cgctgtccga acctggagac aggaaaacaa  
480

agtccttt ctctgattc accaaaaaat aaaatactga ctaccatcac tgtgatgaga

## eolf-seql-S000001.txt

540

tcctatagt ctcaggaact gaagtcttta aacaaccagg gaccctctgc ccctagaata  
600

gaacatact agaagtcctt tctgctagga caacgaggat catgggagac cacctggacc  
660

tctcctagg agtggtgctc atggccggtc ctgtgtttgg aattccttcc tgctcctttg  
720

tggccgaat agccttttat cgtttctgca acctcaccca ggtccccag gtcctcaaca  
780

cactgagag gtccttgctg agcttcaact atatcaggac agtcactgct tcctccttcc  
840

ctttctgga acagctgcag ctgctggagc tcgggagcca gtatacccc ttgactattg  
900

caaggaggc cttcagaaac ctgccaacc ttagaatctt ggacctggga agtagtaaga  
960

atacttctt gcatccagat gcttttcagg gactgttcca tctgtttgaa cttagactgt  
1020

tttctgtgg tctctctgat gctgtattga aagatggta tttcagaaat ttaaaggctt  
1080

aactcgctt ggatctatcc aaaaatcaga ttcgtagcct ttaccttcat ccttcatttg  
1140

gaagttgaa ttccttaaag tccatagatt tttcctccaa ccaaatttc cttgtatgtg  
1200

acatgagct cgagccccta caagggaaaa cgctctcctt ttttagcctc gcagctaata  
1260

ttgtatag cagagtctca gtggactggg gaaaatgtat gaaccattc agaaacatgg  
1320

gctggagat actagatgtt tctggaaatg gctggacagt ggacatcaca ggaaacttta  
1380

aatgccat cagcaaaagc caggccttct ctttgattct tgcccaccac atcatgggtg  
1440

gggtttgg cttccataac atcaaagatc ctgaccagaa cacatttgct ggcttgcca  
1500

agttcagt gagacacctg gatctttcac atgggtttgt cttctcctg aactcacgag  
1560

tttgagac actcaaggat ttgaaggttc tgaaccttgc ctacaacaag ataaataaga  
1620

## eolf-seql-S000001.txt

tgcagatga agcattttac ggacttgaca acctccaagt tctcaatttg tcatataacc  
1680

tctggggga actttacagt tcgaatttct atggactacc taaggtagcc tacattgatt  
1740

gcaaaagaa tcacattgca ataattcaag accaaacatt caaattcctg gaaaaattac  
1800

gaccttga tctccgagac aatgctctta caaccattca ttttattcca agcatacccg  
1860

tatcttctt gagtggcaat aaactagtga ctttgccaaa gatcaacctt acagcgaacc  
1920

catccactt atcagaaaac aggctagaaa atctagatat tctctacttt cttctacggg  
1980

acctcatct ccagattctc attttaaate aaaatcgctt ctctctctgt agtggagatc  
2040

aacccttc agagaatccc agcttagaac agcttttcct tggagaaaat atgttgcaac  
2100

tgcctggga aactgagctc tggtgggatg tttttgaggg actttctcat cttcaagttc  
2160

gtatttgaa tcataactat cttaattccc ttccaccagg agtatttagc catctgactg  
2220

attaagggg actaagcctc aactccaaca ggctgacagt tctttctcac aatgatttac  
2280

tgctaattt agagatcctg gacatatcca ggaaccagct cctagctcct aatcctgatg  
2340

atttgatc acttagtgtc ttggatataa ctcataacaa gttcatttgt gaatgtgaac  
2400

tagcacttt tatcaattgg cttaatcaca ccaatgtcac tatagctggg cctcctgcag  
2460

atataattg tgtgtaccct gactcgttct ctgggggttc cctcttctct ctttccacgg  
2520

aggttgtga tgaagaggaa gtcttaaagt ccctaaagt ctcccttttc attgtatgca  
2580

tgtaactct gactctgttc ctcatgacca tctcacagt caciaagtgc cggggcttct  
2640

tttatctg ttataagaca gccagagac tgggtgttcaa ggaccatccc cagggcacag  
2700

eolf-seql-S000001.txt

acctgatat gtacaaatat gatgcctatt tgtgcttcag cagcaaagac ttcacatggg  
2760

gcagaatgc ttgctcaaa cacctggaca ctcaatacag tgaccaaagc agattcaacc  
2820

gtgctttga agaaagagac ttgtgccag gagaaaaccg cattgccaat atccaggatg  
2880

catctggaa cagtagaaag atcgcttctc ttgtgagcag acacttcctt agagatggct  
2940

gtgccttga agccttcagt tatgccagc gcagggtgctt atctgacctt aacagtgtc  
3000

catcatggg ggtggttggg tccttgtccc agtaccagtt gatgaaacat caatccatca  
3060

aggctttgt acagaaacag cagtatttga ggtggcctga ggatctccag gatgttggct  
3120

gtttcttca taaactctct caacagatac taaagaaaga aaaagaaaag aagaaagaca  
3180

taacattcc gttgcaaact gtagcaacca tctcctaata aaaggagcaa tttccaactt  
3240

tctcaagcc acaaataact cttcactttg tatttgcacc aagttatcat tttggggtcc  
3300

ctctggagg tttttttttt ctttttgcta ctatgaaaac aacataaatc tctcaatttt  
3360

gtatcaaa  
3369

210> 17

211> 2855

212> DNA

213> Homo sapiens

400> 17

agtggcagt tatatagacc ggcgggcgag cagcgtgtg tgcggacgca gttgcgtgag  
60

tggtgtac taccctcggg gctgtggtgc agagctagtt cctctccagc tcagccgcgt  
120

tggttgac atatttgact ctttcccccc caggttgaat tgaccaaagc aatggtgatg  
180

agaagccta gtcccctgct ggtcgggagg gaatttgtga gacagtatta cacactgctg  
240

eolf-seql-S000001.txt

accaggccc cagacatgct gcatagattt tatggaaaga actcttctta tgtccatggg  
300

gattggatt caaatggaaa gccagcagat gcagtctacg gacagaaaga aatccacagg  
360

aagtgatgt cacaaaactt caccaactgc cacaccaaga ttcgccatgt tgatgctcat  
420

ccacgctaa atgatgggtgt ggtagtccag gtgatggggc ttctctctaa caacaaccag  
480

ctttgagga gattcatgca aacgtttgtc cttgctcctg aggggtctgt tgcaaataaa  
540

tctatgttc acaatgatat cttcagatac caagatgagg tctttggtgg gtttgtcact  
600

agcctcagg aggagtctga agaagaagta gaggaacctg aagaaagaca gcaaacacct  
660

aggtggtac ctgatgattc tggaacttct tatgatcagg cagttgtcag taatgacatg  
720

aagaacatt tagaggagcc tgttgctgaa ccagagcctg atcctgaacc agaaccagaa  
780

aagaacctg tatctgaaat ccaagaggaa aagcctgagc cagtattaga agaaactgcc  
840

ctgaggatg ctcagaagag ttctttctca gcacctgcag acatagctca gacagtacag  
900

aagacttga ggacattttc ttgggcatct gtgaccagta agaattctcc acccagtggg  
960

ctgttccag ttactgggat accacctcat gttgttaaag taccagcttc acagccccgt  
1020

cagagtcta agcctgaatc tcagattcca ccacaaagac ctcagcggga tcaaagagtg  
1080

gagaacaac gaataaatat tcctcccaa aggggaccca gaccaatccg tgaggctggt  
1140

agcaaggtg acattgaacc ccgaagaatg gtgagacacc ctgacagtca ccaactcttc  
1200

ttggcaacc tgcctcatga agtggacaaa tcagagctta aagatttctt tcaaagttat  
1260

gaaacgtgg tggagttgcg cattaacagt ggtgggaaat tacccaattt tggttttgtt  
1320

tgtttgatg attctgagcc tgttcagaaa gtccttagca acaggcccat catgttcaga

## eolf-seql-S000001.txt

1380

gtgaggtcc gtctgaatgt cgaagagaag aagactcgag ctgccaggga aggcgaccga  
1440

gagataatc gccttcgggg acctggaggc cctcgagggt ggctgggtgg tggaatgaga  
1500

gccctcccc gtggaggcat ggtgcagaaa ccaggatttg gagtgggaag ggggcttgcg  
1560

cacggcagt gaatcttcat ggatcttcat gcagccatac aaaccctggt tccaacagaa  
1620

ggtgaattt tcgacagcct ttggtatctt ggagtatgac ccagttctgt tataaactgc  
1680

taagtttgt ataattttac tttttttgtg tggtaatggt gtgtgctccc tctccctctc  
1740

tccctttcc tgacctttag tctttcactt ccaattttgt ggaatgatat tttaggaata  
1800

cggactttt aaagaagcaa aaaaaagac tgaatttcct tgcttacttt gcatatacag  
1860

ctggatttt tttttttttt ttacagccat ttccccaag gaatgtcttg catattactg  
1920

catttggtg tgtttcattc attggaatat ttcttatttt ctacgtgttt gaaaagcctg  
1980

aagaaatac aggatttgat aatattttga aggcaggaaa aacccaaatt gtttcttctt  
2040

gagagtcac gactaccttc tgggtgtggag aaattgccat tggaaaattt gacaattttg  
2100

ttctcactg gtatgtttta aaactgaata aaaggaatag aatttttttt tgataaagga  
2160

cacaaaaca attctaaaac ctaactgttt ttaccattga aatttaaatt gtgataatag  
2220

ttttaaatg tctagaatgc aactgatagg cttttcttga actgttagtt tttttgaagt  
2280

gttttttca tgtttaattt gtatttgtaa aaaaacaaaa agcaaaaaaa ttcccaaac  
2340

agataaca accagagcaa aactgttggt ctttctatct atctttgatt tcagtcttgg  
2400

aattgttta aaaaaaaaaa ctagatttgt tttattaggt tcagagtatg tggggaatta  
2460



## eolf-seql-S000001.txt

agaatccct ctttcatcac tttgtgtatg tcttttggtta acatatttgt tatgccttat  
2520

ctaaaattg agtctcaaac tggaatgcct ttgaagacag atgcttctat agaggttctt  
2580

gacctaaat agttcagcat ttgtattttt attctggtat ctaatcagat tcctaatcat  
2640

gcccgttaag aaggaatggt actttaatat tggactttgc tcatgtgctc gtgtccgcat  
2700

ttttttttt cttaaaatca tagccatatg gttaaattttc tatttttggtta tggttctctt  
2760

tattgatgg gcatgcagtg ggtgttactt ggaaatggcc aatttttatt aaaatatttc  
2820

ggaagaaaa tttaaaaaaa aaaaaaaaaa aaaaa  
2855

210> 18  
211> 2128  
212> DNA  
213> Homo sapiens

400> 18  
tggaacca ctgcaatgac attattccca gtgctgttgt tcctggttgc tgggctgctt  
60

catcttttc cagcaaatga agataaggat cccgctttta ctgctttggt aaccacccaa  
120

cacaagtgc aaaggagat tgtgaataag cacaatgaac tgaggagagc agtatctccc  
180

ctgccagaa acatgctgaa gatggaatgg aacaaagagg ctgcagcaaa tgcccaaaag  
240

gggcaaacc agtgcaatta cagacacagt aacccaaagg atcgaatgac aagtctaaaa  
300

gtggtgaga atctctacat gtcaagtgcc tccagctcat ggtcacaagc aatccaaagc  
360

gttttgatg agtacaatga ttttgacttt ggtgtagggc caaagactcc caacgcagtg  
420

ctggacatt atacacaggt tgtttggtac tcttcatacc tcgttggtat tggaaatgcc  
480

actgtccca atcaaaaagt tctaaaatac tactatgttt gccaatattg tcctgctggt  
540

## eolf-seql-S000001.txt

attgggcta atagactata tgtcccttat gaacaaggag caccttgtgc cagttgcccc  
600  
ataactgtg acgatggact atgcaccaat gggtgcaagt acgaagatct ctatagtaac  
660  
gtaaaagtt tgaagctcac attaacctgt aaacatcagt tggtcaggga cagttgcaag  
720  
cctcctgca attgttcaaa cagcatttat taaatacgca ttacacaccg agtagggcta  
780  
gtagagagg agtcagatta tctacttaga tttggcatct acttagattt aacatatact  
840  
gctgagaaa ttgtaggcat gtttgataca catttgattt caaatgtttt tcttctggat  
900  
tgcttttta ttttacaaaa atatttttca tacaaatggg taaaaagaaa caaatctat  
960  
acaacaact ttggattttt atatataaac tttgtgattt aaatttactg aatttaatta  
1020  
ggtgaaaat tttgaaagtt gtattctcat atgactaagt tcactaaaac cctggattga  
1080  
agtgaaaat tatgttccta gaacaaaatg tacaaaaaga acaatataat tttcacatga  
1140  
cccttggt gtagttgcct ttcttagctc cactctaagg ctaagcatct tcaaagacgt  
1200  
ctcccatat gctgtcttaa ttcttttcac tcattcaccc ttcttcccaa tcatctggct  
1260  
gcctctca caattgagtt gaagctgttc ctctaaaac aatcctgact tttattttgc  
1320  
aaatcaat acaatccttt gaatttttta tctgcataaa ttttacagta gaatatgatc  
1380  
accttcat ttttaaacct ctcttctctt tgacaaaact tccttaaaaa agaatacaag  
1440  
aatatagg taaataccct ccactcaagg aggtagaact cagtcctctc ctttgtgagt  
1500  
tcactaaa atcagtgact cacttccaaa gagtggagta tggaaaggga aacatagtaa  
1560  
ttacaggg gagaaaaatg acaaatgacg tttcaccaa gtgatcaaaa ttaacgtcac  
1620

eolf-seql-S000001.txt

agtgataag tcattcagat ttgttctaga taatctttct aaaaattcat aatcccaatc  
1680

aattatgag ctaaaacatc cagcaaactc aagttgaagg acattctaca aaatatccct  
1740

gggtatttt agagtattcc tcaaaactgt aaaaatcatg gaaaataagg gaatcctgag  
1800

aacaatcac agaccacatg agactaagga gacatgtgag ccaaatagcaa tgtgcttctt  
1860

gatcagatc ctggaacaga aaaagatcag taatgaaaaa actgatgaag tctgaataga  
1920

tctggagta tttttaacag tagtgttgat ttcttaatct tgacaaatat agcagggtaa  
1980

gtaagatga taacgttaga gaaactgaaa ctgggtgagg gctatctagg aattctctgt  
2040

ctatcttac caaatcttcg gtaagtctaa gaaagcaatg caaaataaaa agtgtcttga  
2100

aaaaaaaaa aaaaaaaaaa aaaaaaaaa  
2128

210> 19

211> 1428

212> DNA

213> Homo sapiens

400> 19

ttcagggtca gggagaatgt ataaatgtcc attgccatcg aggttctgct atttttgaga  
60

gctgaagca actccaagga cacagttcac agaaatttgg ttctcagccc caaaataactg  
120

ttgaattgg agacaattac aaggactctc tggccaaaaa cccttgaaga ggccccgtga  
180

ggaggcagt gaggagcttt tgattgctga cctgtgtcgt accaccccag aatgtgcact  
240

ggggctgtg ccagatgcct gggggggacc ctcatccccc ttgctttttt tggcttctg  
300

ctaacatcc tgttattttt tcttgaggga aaagtgatag atgacaacga ccacctttcc  
360

aagagatct ggttttttcgg aggaatatta ggaagcgggtg tcttgatgat cttccctgcg  
420

eolf-seql-S000001.txt

tggtgttct tgggcctgaa gaacaatgac tgctgtgggt gctgcggcaa cgagggctgt  
480

ggaagcgat ttgcgatgtt cacctccacg atatttgctg tggttggatt cttgggagct  
540

gatactcgt ttatcatctc agccatttca atcaacaagg gtcctaaatg cctcatggcc  
600

atagtacat ggggctaccc cttccacgac ggggattatc tcaatgatga ggccttatgg  
660

acaagtgcc gagagcctct caatgtgggt ccctggaatc tgaccctctt ctccatcctg  
720

tggtcgtag gaggaatcca gatggttctc tgcgccatcc aggtgggtcaa tggcctcctg  
780

ggaccctct gtggggactg ccagtgttgt ggctgctgtg ggggagatgg acccgtttaa  
840

cctccgaga tgagctgctc agactctaca gcatgacgac tacaatttct tttcataaaa  
900

ttcttctct tcttggaatt attaatcct atctgcttcc tagctgataa agcttagaaa  
960

ggcagttat tccttctttc caaccagctt tgctcgagtt agaattttgt tattttcaaa  
1020

aaaaaatag tttggccact taacaaattt gatttataaa tctttcaaatt tagttccttt  
1080

tagaattta ccaacagggt caaagcatac ttttcatgat ttttttatta caaatgtaaa  
1140

tgtataaag tcacatgtac tgccatacta cttctttgta tataaagatg tttatatctt  
1200

ggaagtttt acataaatca aaggaagaaa gcacatttaa aatgagaaac taagaccaat  
1260

tctgttttt aagaggaaaa agaattgattg atgtatccta agtattgtta tttgttgtct  
1320

tttttgctg ccttgcttga gttgcttggt actgatcttt tgaggctgtc atcatggcta  
1380

ggttctttt atgtatgtta aattaaacc tgaattcaga ggtaacgt  
1428

210> 20  
211> 2948  
212> DNA

eolf-seql-S000001.txt

:213&gt; Homo sapiens

:400&gt; 20

ggtaatgat taatctgtca ggcacaaaag ggattgtttt ggggatttcg ggttctaagt  
60gcagattca aacaaatagc agcgaacagg gaatgacagt tccaccagaa gacgattaag  
120cacagcctc taattggaac ggcatttgta cagtcagaga ctcttaccag acatctccag  
180aatctgtga gccattgtca aaacgtccat tttcatctgg ctgtgaaagt gaggaccaca  
240caggtaggt attggtagaa acaggagtcc tcagagaagc cccaagatgc agcctgaggg  
300gcagaaaag ggaaaaagct tcaagcagag actggtcttg aagagcagct tagcgaaaga  
360accctctct gagttcttgg gcacgttcat cttgattgtc cttggatgtg gctgtgttgc  
420caagctatt ctcagtcgag gacgttttgg aggggtcatc actatcaatg ttggattttc  
480atggcagtt gcaatggcca tttatgtggc tggcgggtgc tctggtggtc acatcaacc  
540gctgtgtct ttagcaatgt gtctctttgg acggatgaaa tgggtcaaatt tgccatttta  
600gtgggagcc cagttcttgg gagcctttgt gggggctgca accgtctttg gcatttacta  
660gatggactt atgtcctttg ctggtggaaa actgctgata gtgggagaaa atgcaacagc  
720cacattttt gcaacatacc cagctccgta tctatctctg gcgaacgcat ttgcagatca  
780gtggtggcc accatgatac tcttcataat cgtctttgcc atttttgact ccagaaactt  
840ggagccccc agaggcctag agcccattgc catcggcctc ctgattattg tcattgcttc  
900ccctggga ctgaacagtg gctgtgccat gaaccagct cgagacctga gtcccagact  
960tcaactgcc ttggcaggct gggggtttga agtcttcaga gctggaaaca acttctggtg  
1020

attcctgta gtgggccctt tgggtggtgc tgtcattgga ggcctcatct atgttcttgt

eolf-seql-S000001.txt

1080

attgaaatc caccatccag agcctgactc agtctttaag gcagaacaat ctgaggacaa  
1140

ccagagaaa tatgaactca gtgtcatcat gtagtggcat gctcagctct ggatttgcag  
1200

cagtttggg attctcttca gaaagatggc atctaagtgt ctgtgttctt gtaagcctga  
1260

gtggaatcc acccagtttt gtctgctagc catatgggac atctaattgg aaaagcatct  
1320

cataaaagt ttggaaacaa tgaccacttc tctaccattg tccccacccc cccccccag  
1380

ataacgctg actgtcccct gaaacagcct tctctcctgc cctgtttatt tcatcctcga  
1440

gggaattct tgctaggtaa gcactaataa ctcggcattct tgacgatagt cccatttggg  
1500

ggtttcagc tgcactatct gtatgaaatg gtgtcaccaa aacccttttc ttcagtatcg  
1560

caaagatta cattctgagt accaaccaaa ccctaaattg aaagacaaaa ctatggtttc  
1620

gtcaacata ttcatgaatt agggagctaa tgggttaagc ttccagttcc cgctatgcta  
1680

tggatttgt ataaatactg atattctcca aacctagtgg tgtagggagc aagagaatgc  
1740

gctggaagg cacaagggga ggacattgtg gcattcagaa actgcaggag acaagatgaa  
1800

ttgagaagc caaatggaat ttttaatgga aaccatttat cagattaatc tcttgctctc  
1860

tgcatttta gaggacacca attaatttcc tggctcttag tatataataa cctaaaatac  
1920

attgtaacc tcagtcatga aaaatacatc actctgtctt tttagctcaa atgtattttc  
1980

taattgccc acttgagaac agacatttga caagttatat caacgactgt gcttgtccat  
2040

attttacac atgccctaga agccaaaact gaaagccact ggatcctggg ctagctgaat  
2100

tcagagtg ggaggtctcc aaaaagatat taccttattg ggcttaacaa ttcacaaggc  
2160

## eolf-seql-S000001.txt

ctttcacac ccattatcta atttaatcct cataatgact atgtgaggca aatgccacat  
2220

gcccatTTTt tcagataaag aaacaaaatc ttagggaaga taagttgagt tgtccaagag  
2280

acactgaaa gttgaatggt atctaatagca ttccctctacc tttcagaaga tcagtagctg  
2340

ctgagaatc tttgccaaat ctcccttgct agccagaagt ggaattggca gcttctagaa  
2400

atgtacacc tctggacaaa atgttcctca atcttaagat acaaagaccc tcattgtctg  
2460

gtctattcc cacacttact gactacagat gaaggaaagt ggtagcaatt taatcataac  
2520

ttcatttgc tgaaaaacat tatgagaagg cctcccttcc taagccacct ctggtcttgc  
2580

aagtcttga tcttgcttcc tgccagcacc aaacattaca ttcaggggat ttcctctggc  
2640

agtcctttt ccccttgaag ttctctaata gatgttactt ttgacaaaag atcgctatg  
2700

gttacaagc accaggggat gctctacatc aagggatgca ccttcagtca aactgtcaaa  
2760

agcccagaa ttcccaaagg cattagggtt cccaactgct ttgtgctgat atcagaacag  
2820

agaaattaa atgtgaaatg tttctgatga cttatgttct acaatctatg gacatacggg  
2880

ttttttttt cttgctttga agctacctgg atatttccta tttgaaataa aattgttcgg  
2940

attgtt  
2948

?10> 21

?11> 2270

?12> DNA

?13> Homo sapiens

!00> 21

acggagac ctcgcaggct cccggaactg tcgcccttcc aggatgtggc tccctgctct  
60

tcctggcc actctcgctg cttccgcggc ttgggcagtg catccgtcct cgccacctgt  
120

## eolf-seql-S000001.txt

igtggacacc gtgcatggca aagtgttggg gaagttcatc agcttagaag gatttgcaca  
180  
icctgtggcc gttttcctgg gaatcccttt tgccaagccc cctcttggac cctgaggtt  
240  
actccaccg cagcctgcag agccgtggag ctttgtgaag aatgccacct tgtaccctcc  
300  
atgttcacc caagatccaa ggcggggggg gcagttaatc tcagagctat ttacaaaccg  
360  
aaagagaac attcctctca agctttctga agactgtctt tacctcaata ttacactcc  
420  
gctgacttg accaagaaaa acaggctgcc ggtgatgggtg tggatccacg gaggggggct  
480  
atgggtgggt gcggcatcaa cctatgatgg gctggccctt gctgcccattg aaaacgtggt  
540  
gtggtgacc attcaatatc gcctgggcat ctggggattc ttcagcacag gggatgaaca  
600  
agcccgggg aactggggtc acctggacca gctggctgcc ctgcactggg tccaggacaa  
660  
attgccagc tttggaggga acccaggctc tgtgaccatc tttggagggt cagcgggagg  
720  
gaaagtgtc tctgttcttg ttttgtctcc attggccaag aacctcttcc accggggccat  
780  
tctgagagt ggcgtggccc tcacttctgt tctggtgaag aaaggtgatg tcaagccctt  
840  
gctgaggta ggtctccggc tgggtacgtc ctggctggac acccacacct ccttggctct  
900  
tgctcctga atcctcaggg atctctcttg tggttggttg tagctaattg tctcctagaa  
960  
cactgaggc accaatggct gagcaggaag ggcgaggaga caccttgatc agcgtcccag  
1020  
ttcacagcc aggcaaaccg acacagggtc tggaagggtt ttgccaaggg cagcaggtga  
1080  
ccgggcaga gctgggactc cagctcatgg ccctagcagc cagtacagtg ccctgtctgt  
1140  
accacactc cacctatgtg ccagggcctg gtgccatgtt gggcagtgat ggtgtcttgt  
1200



eolf-seql-S000001.txt  
tctctcagg gtctgagttc tgtggacca cttgtgggct gtgggcctga agcagttcca  
1260  
actgagcgc ctgataacca gggttggttc ctggagaatt cactcattga ttcatttgtt  
1320  
acacaacaa aactaggtga ctaagtgaag gcaaaaacaa gaaatgggca gacgtcatcc  
1380  
ttggctcaa agccagatgt ccgtgtggag gggacataga cactgcatgg gccctatgtg  
1440  
tctctgcatt ctagtcagac atctaacc tccccaagct tcttgctata atgttagaat  
1500  
gatgaatag ctacagaatc acacaactag aaagtgtcac ctatgacaag agcagtgaag  
1560  
tgaggtact tgctgccaca gcagaatcta aagaaagcat tgagtcctgg ggctggacga  
1620  
gttaccagg gaaggcttgc ttggaaaagt gactaatgag tcaggagcaa ggaacgtcca  
1680  
ggagtggga gcagcacatg cgcgtgctgt ggcaggagga cgcattccaa tcgggagggg  
1740  
agacagaga cagagccgat ggggccagag caggcagaac aggcggagca cggcgagtac  
1800  
gacagaggg gacgttgga ggggccaccc tgcacaggac cctggcaagg attttgtcat  
1860  
atctggaga gtggttgaaa gccaaaggaa gaggtgatcg ataggaatcc agacctaggc  
1920  
gaggatcgc cactggagc cagtggcatg gaggatttcg gtagatttga aagcttggtt  
1980  
gggaaagca tccaaattta aagggccggt acataggagg agagaaaatg gggatgccaa  
2040  
aatttttag aatttttgag aattttttaa gaattcattg gttataagca acagttgccc  
2100  
ttgaccaga cttaagtcaa gaaggagcat tagcctggtg tgggtggctca tgctgtaat  
2160  
cctgcaatt tgggagacca aatgagaagg attgcttgag ccaggagtt tgagaccagc  
2220  
agggcaaca aagtgatacc ctgtctctac aaaaaaaaaa aaaaaaaaaa  
2270

eolf-seql-S000001.txt

```
:210> 22
:211> 674
:212> DNA
:213> Homo sapiens

:400> 22
:cccttggtt ccgcccgcgc gtcacgtgac cccagcgcct acttgggctg aggagccgcc
  60

icgtcccttc gccgagtcct ctcgccagat tccctccgtc gccgccaaga tgatgtgcgg
 120

icgcgccctcc gccacgcagc cggccaccgc cgagacccag cacatcgccg accaggtgag
 180

itcccagctt gaagagaaaag aaaacaagaa gttccctgtg ttttaaggccg tgtcattcaa
 240

iagccaggtg gtcgcgggga caaactactt catcaaggtg cacgtcggcg acgaggactt
 300

igtacacctg cgagtgttcc aatctctccc tcatgaaaac aagcccttga ccttatctaa
 360

taccagacc aacaaagcca agcatgatga gctgacctat ttctgatcct gactttggac
 420

aggcccttc agccagaaga ctgacaaagt catcctccgt ctaccagagc gtgcacttgt
 480

atcctaataa taagcttcat ctccgggctg tgccccttgg ggtggaaggg gcaggattct
 540

cagctgctt ttgcatttct cttcctaataa ttcattgtgt tgatttcttt ccttcccaat
 600

ggtgatctt aattactttc agaatatattt caaaatagat atatttttaa aatccttaaa
 660

aaaaaaaaaa aaaa
 674
```

```
210> 23
211> 3189
212> DNA
213> Homo sapiens

400> 23
gcgtgagcg gcgaaagccg ggagggcgag cgagagagca agcaggcagc aggctgccgg
  60

ggcggggag gacggcacag agggagggag cgagcgagca gtgagtaagc cagcaagggc
 120
```

eolf-seql-S000001.txt

gtcgggtcc cgaggtcagc cgagatttct caggccctc cggccccctc cctggagtcc  
180

cagcgctc cgggtgtccag aggatcggac acggcccggc ccggccatgg cctcgttgct  
240

aaggtggat caggaagtga agctcaaggt tgattctttc aggagcggga tcacaagtga  
300

gcagaagac ttggtggcaa attttttccc aaagaagtta ttagaacttg atagttttct  
360

aaggaacca atcttaaaca tccatgacct aactcagatc cactctgaca tgaatctccc  
420

gtccctgac cccattcttc tcaccaatag ccatgatgga ctggatggtc ccacttataa  
480

aagcgaagg ttggatgagt gtgaagaagc cttccaagga accaaggtgt ttgtgatgcc  
540

aatgggatg ctgaaaagca accagcagct ggtggacatt attgagaaag tgaaacctga  
600

atccggctg ttgattgaga aatgtaacac ggtcaaaatg tgggtacagc tcctgattcc  
660

aggatagaa gatggaaaca actttggggt gtccattcag gaggaacag ttgcagagct  
720

agaactggt gagagtgaag ctgcattcta tctggaccag atttctagat attatattac  
780

agagccaaa ttggtttcta aaatagctaa atatcccat gtggaggact atcgccgcac  
840

gtgacagag attgatgaga aagaatatat cagccttcgg ctcatcatat cagagctgag  
900

aatcaatat gtcactctac atgacatgat cctgaaaaat atcgagaaga tcaaacggcc  
960

cggagcagc aatgcagaga ctctgtactg aggccagggc cagggccagg ggactctgtg  
1020

gtctggctc aagaccgaca ttgccttggt ttgttacatg actatcgtga tggggaaact  
1080

gttggaat agtaatcaca cctctctggt ttagttaga gtctaataa actctcatct  
1140

gttctgtga tgtgtttacc tcttttttca ggcctcagga actcttctat ttccttcct  
1200

atacccac acccaacctg tcgtaatttc tggagaactc caggtttgtg tgtgcaggat

## eolf-seql-S000001.txt

1260

ttggcaca aaatacctgt gttttcattc tccccctctc tccctcctgt gtcttgcgct  
1320

tatgttttc ttccgtttga taattagttg gttaaaagct gaggggaaccg gaaggaaagt  
1380

ctaggtgtt ttttaggaac taggggtggcg gggggacgaa cttctcttcc tcacatgagg  
1440

tactgtttc tttcctctgt ggggcattgg atcctccac agttgcctg gtgatgactt  
1500

gggcttccc atctgtgtac atcccacttt gaatcttgat cgtgacaaga aataccttag  
1560

ccttcagtc aattccgaag ctcttcagt tgtttttata atgggcgttt tcacatgcac  
1620

tatgtgtat gcatgtatac gcccatacag acatgcacac acagactcct actccattag  
1680

taacatacc ctccctctcc acaaccctg tcacatacct ttcaggaggt gacagttgtc  
1740

tagttgtca tctaccaga caaacgtcct gggcccgtcc tccctcctga tactgtagcc  
1800

cttggtacc caggggtgagt tgggtggagaa cagagagatg agaagcagag ggcttgggga  
1860

agcctgttc ctctctgact cagccctttt tggcattatt gcaagagctt gactcctggt  
1920

gccttttcc cagccagttt tcagttgggg tgaaggtttc tgcaagtgtg aggtccagat  
1980

ctgctgctc atgttgggct ttccttttgg gaactatttc tctttattta tagtgtcggg  
2040

ttccgggga aagcaatcat tgggtgtgtat gtgtatgtgc atgcacacac gtgcatatac  
2100

atattgtgt atgtggaaat gtgctgggca agtcaaaact atagaagagt tgcctcctgt  
2160

ctcgaatc ttccagagat atcacttaat tgtaaacagc ttttgtgtta atccccttca  
2220

ccctagct cttttattct accacggctg gagagttgat acctgcagtc agcctgccag  
2280

gactcttag tgtctgtttc tgacttattt ttctgtctc tgtcttccaa cccccaataa  
2340

## eolf-seql-S000001.txt

atttccacc ggggatgcat catttttact cccaatattc tgtagagagg gagtcaggat  
 2400  
 ctgtcttcc cacgaatagt actcagtaac aaaccaattg catttttagtt gggcagtgct  
 2460  
 ccacccacc ctccagatcc cttccagcta aaacccttcc cccttccttc catgtgtttc  
 2520  
 cagtttccc gtttcgtttg ttggactggt ccactgcccc tcctcctcac cctatcaccc  
 2580  
 tggatcgta atgtaaaatt cttttacat gtcaagaaat tattaataat acaggtactt  
 2640  
 gacctttt ctaaagccgc agaccctggt gcaatgctct ggtggctagg gatgtactca  
 2700  
 gctcatatg tgtgcacgct tggacacca cctccatgga cacctagcca ccctgtttgtg  
 2760  
 gtccttatg ccagttgagc tgaatctttt cccagttata gtggaaagac tgaggcttct  
 2820  
 cctactgag caaggttggg tgcttcattt gtgttcagtc tgaattatgg gaaagttagc  
 2880  
 cttcccaga cctaagctgc cttctctccc tactttcaga agatcctagt tccttccttc  
 2940  
 cgagtgata cccatgaact gccagtagag gctgctatcg ttccatgtgt aaggaatgaa  
 3000  
 tggttcaag gcgcgtccta cccagtcatt ttctttacct tataactaatt cttcctgaat  
 3060  
 atgtcttca gtttcttgag gagactccta gttttggttt tcaaattact tggagggctg  
 3120  
 cttaggaatc tatctccctc tgaaataaag tttcctcatc ttccaccttg caaaaaaaaa  
 3180  
 aaaaaaaaa  
 3189  
  
 210> 24  
 211> 3338  
 212> DNA  
 213> Homo sapiens  
  
 100> 24  
 ccagcccg ccccgccgcc ccggtgogc acgcgacgcc ccctccaggc cccgctcctg  
 60

## eolf-seql-S000001.txt

gcccatttt ggtcattcgg ggggcaagcg gcgggagggg aaacgtgcgc ggccgaaggg  
120

aaagcggagc cggcgccggc tgcgcagagg agccgctctc gccgccgcca cctcggctgg  
180

agcccaacga ggctgccgca tcctgccctc ggaacaatgg gactcggcgc gcgaggtgct  
240

gggccgcgc tgctcctggg gacgctgcag gtgctagcgc tgctgggggc cgcccatgaa  
300

gcgcagcca tggcggagac tctccaacat gtgccttctg accatacaaa tgaaacttcc  
360

acagtactg tgaaaccacc aacttcagtt gcctcagact ccagtaatac aacggtcacc  
420

ccatgaaac ctacagcggc atctaataca acaacaccag ggatgggtctc aacaaatatg  
480

cttctacca ccttaaagtc tacacccaaa acaacaagtg tttcacagaa cacatctcag  
540

tatcaacat ccacaatgac cgtaaccac aatagttcag tgacatctgc tgcttcatca  
600

taacaatca caacaactat gcattctgaa gcaaagaaag gatcaaaatt tgatactggg  
660

gctttgttg gtggtattgt attaacgctg ggagttttat ctattcttta cattggatgc  
720

aatgtatt actcaagaag aggcattcgg tatcgaacca tagatgaaca tgatgccatc  
780

tttaaggaa atccatggac caaggatgga atacagattg atgctgccct atcaattaat  
840

ttggtttat taatagttta aaacaatatt ctctttttga aaatagtata aacaggccat  
900

catataatg tacagtgtat tacgtaaata tgtaaagatt cttcaaggta acaagggttt  
960

ggttttgaa ataaacatct ggatcttata gaccgttcac acaatgggttt tagcaagttc  
1020

tagtaagac aaacaagtcc tatctttttt tttttggctg ggggtgggggc attggtcaca  
1080

atgaccagt aattgaaaga cgtcatcact gaaagacaga atgccatctg ggcatacaaa  
1140

eolf-seql-S000001.txt

aagaagttt gtcacagcac tcaggatttt gggatatctt tgtagctcac ataaagaact  
1200

cagtgcctt tcagagctgg atatatctta attactaatg ccacacagaa attatacaat  
1260

aaactagat ctgaagcata atttaagaaa aacatcaaca ttttttgtgc tttaaactgt  
1320

gtagttggt ctagaaacaa aatactccaa gaaaaagaaa attttcaaataaaaacccaaa  
1380

taatagctt tgcttagccc tgtagggat ccattggagc attaaggagc acatattttt  
1440

ttaacttct tttagacttt caatgttgat gtaatttttg ttctctgtgt aatttaggta  
1500

actgcagtg tttaacataa taatgtttta aagacttagt tgtcagtatt aaataatcct  
1560

gcattatag ggaaaaaacc tcctagaagt tagattattt gctactgtga gaatattgtc  
1620

ccactggaa gttacttttag ttcatttaata ttttaattta tattttgtga atattttaag  
1680

actgtagag ctgctttcaa tatctagaaa tttttaattg agtgtaaaca cacctaactt  
1740

aagaaaaag aaccgcttgt atgattttca aaagaacatt tagaattcta tagagtcaaa  
1800

ctatagcgt aatgctgtgt ttattaagcc agggattgtg ggacttcccc caggcaacta  
1860

acctgcagg atgaaaatgc tatattttct ttcatgcact gtcgatatta cttagatttg  
1920

ggaaatgac atttttatac taaaacaaac accaaaatat tttagaataa attcttagaa  
1980

gttttgaga ggaattttta gagaggacat ttcctccttc ctgatttgga tattccctca  
2040

atccctcct cttactccat gctgaaggag aagtactctc agatgcatta tgtaaatgga  
2100

agaaaaagc acagtattgt agagacacca atattagcta atgtattttg gagtgttttc  
2160

attttacag ttttatattcc agcactcaaa actcagggtc aagttttaac aaaagaggta  
2220

gtagtcaca gtaaatacta agatggcatt tctatctcag agggccaaag tgaatcacac

eolf-seql-S000001.txt

2280

agtttctga aggtcctaaa aatagctcag atgtcctaata gaacatgcac ctacatttaa  
2340

aggagtaca ataaaactgt tgtcagcttt tgttttacag agaacgctag atattaagaa  
2400

tttgaaatg gatcatttct acttgctgtg cattttaacc aataatctga tgaatataga  
2460

aaaaatgat ccaaaatatg gatatgattg gatgtatgta acacatacat ggagtatgga  
2520

gaaattttc tgaaaaatac atttagatta gtttagtttg aaggagaggt gggctgatgg  
2580

tgagttgta tgttactaac ttggccctga ctggttggtc aaccattgct tcatttcttt  
2640

caaatgta gttaagatat actttattct aatgaaggcc ttttaaattt gtccactgca  
2700

tcttggtat ttcactactt caagtcagtc agaacttcgt agaccgacct gaagtttctt  
2760

ttgaatact tgtttcttta gcactttgaa gatagaaaaa ccacttttta agtactaagt  
2820

atcatttgc cttgaaagt tctctgcat tgggtttgaa gtagtttagt tatgtctttt  
2880

ctctgtatg taagtagtat aatttggtac tttcaaatac ccgtactttg aatgtaggtt  
2940

ttttgttgt tgttatctat aaaaattgag ggaaatgggt atgcaaaaaa atattttgct  
3000

tggaccata tttcttaagc ataaaaaaat gctcagtttt gcttgcattc cttgagaatg  
3060

atttatctg aagatcaaaa caaacaatcc agatgtataa gtactaggca gaagccaatt  
3120

taaaatttc cttgaataat ccatgaaagg aataattcaa atacagataa acagagttgg  
3180

agtatatta tagtgataat tttgtatttt caamaaaaaa aaagttaaac tcttcttttc  
3240

ttttattat aatgaccagc ttttggtatt tcattgttac caagttctat ttttagataa  
3300

attgttctc cttctaaaaa aaaaaaaaaa aaaaaaaaa  
3338



## eolf-seql-S000001.txt

210> 25  
211> 7941  
212> DNA  
213> Homo sapiens

400> 25  
acacatacg cagcacgat ctcaactcga tctatacact ggaggattaa aacaaacaaa  
60  
aaaaaaaaac atttccttcg ctccccctcc ctctccactc tgagaagcag aggagccgca  
120  
ggcgagggg ccgcagaccg tctggaaatg cgaatcctaa agcgtttcct cgcttgcat  
180  
agctcctct gtgtttgccg cctggattgg gctaattgat actacagaca acagagaaaa  
240  
ttgttgaag agattggctg gtcctataca ggagcactga atcaaaaaaa ttggggaaag  
300  
aatatccaa catgtaatag cccaaaacaa tctcctatca atattgatga agatcttaca  
360  
aagtaaattg tgaatcttaa gaaacttaaa tttcagggtt gggataaaac atcattggaa  
420  
acacattca ttcataacac tgggaaaaca gtggaaatta atctcactaa tgactaccgt  
480  
tcagcggag gagtttcaga aatgggtgtt aaagcaagca agataacttt tcaactggga  
540  
aatgcaata tgtcatctga tggatcagag catagttagg aaggacaaaa atttcactt  
600  
agatgcaaa tctactgctt tgatgcggac cgattttcaa gttttgagga agcagtcaaa  
660  
gaaaagga agttaagagc tttatccatt ttgtttgagg ttgggacaga agaaaatttg  
720  
atttcaaag cgattattga tggagtcgaa agtggttagtc gttttgggaa gcaggctgct  
780  
agatccat tcatactgtt gaaccttctg ccaaactcaa ctgacaagta ttacatttac  
840  
atggctcat tgacatctcc tccctgcaca gacacagttg actggattgt ttttaaagat  
900  
agtttagca tctctgaaag ccagttggct gttttttgtg aagttcttac aatgcaacaa  
960

## eolf-seql-S000001.txt

ctggttatg tcatgctgat ggactactta caaaacaatt ttcgagagca acagtacaag  
1020

tctctagac aggtgttttc ctcatacact ggaaaggaag agattcatga agcagtttgt  
1080

gttcagaac cagaaaatgt tcaggctgac ccagagaatt ataccagcct tcttgttaca  
1140

gggaaagac ctcgagtcgt ttatgatacc atgattgaga agtttgacgt tttgtaccag  
1200

agttggatg gagaggacca aaccaagcat gaatttttga cagatggcta tcaagacttg  
1260

gtgctattc tcaataattt gctaccaat atgagttatg ttcttcagat agtagccata  
1320

gcactaatg gcttatatgg aaaatacagc gaccaactga ttgtcgacat gcctactgat  
1380

atcctgaac ttgatctttt ccctgaatta attggaactg aagaaataat caaggaggag  
1440

aagagggaa aagacattga agaaggcgct attgtgaatc ctggtagaga cagtgtaca  
1500

accaaatac ggaaaaagga accccagatt tctaccacaa cacactacaa tcgcataggg  
1560

cgaatatac atgaagccaa gactaaccga tccccacaa gaggaagtga attctctgga  
1620

agggtgatg ttcccaatac atctttaaat tccacttccc aaccagtcac taaattagcc  
1680

cagaaaaag atatttcctt gacttctcag actgtgactg aactgccacc tcacactgtg  
1740

aaggtactt cagcctcttt aaatgatggc tctaaaactg ttcttagatc tccacatatg  
1800

acttgctgg ggactgcaga atccttaaata acagtttcta taacagaata tgaggaggag  
1860

gtttattga ccagtttcaa gcttgatact ggagctgaag attcttcagg ctccagtccc  
1920

caacttctg ctatcccatt catctctgag aacatatccc aagggtatat attttcctcc  
1980

aaaaccag agacaataac atatgatgtc cttataccag aatctgctag aaatgcttcc  
2040

## eolf-seql-S000001.txt

aagattcaa cttcatcagg ttcagaagaa tcactaaagg atccttctat ggagggaaat  
2100

tgtggtttc ctagctctac agacataaca gcacagcccg atgttggatc aggcagagag  
2160

gctttctcc agactaatta cactgagata cgtgttgatg aatctgagaa gacaaccaag  
2220

ccttttctg caggcccagt gatgtcacag ggtccctcag ttacagatct ggaaatgcc  
2280

attattcta cctttgccta cttcccaact gaggtaacac ctcatgcttt taccatcc  
2340

ccagacaac aggatttggc ctccacggc aacgtggat actcgcagac aaccaaccg  
2400

tatacaatg gtgagacacc tcttcaacct tctacagta gtgaagtctt tctctagtc  
2460

ccccttgt tgcttgacaa tcagatctc aacactacce ctgctgctc aagtagtgat  
2520

cggccttgc atgctaagcc tgtatttccc agtgtcgatg tgcatttga atccatctg  
2580

cttctatg atgggtgcacc tttgcttcca ttttctctg cttccttcag tagtgaattg  
2640

ttcgccatc tgcatacagt ttctcaaate cttccacaag ttacttcagc taccgagagt  
2700

ataaggtgc ctttgcattg ttctctgcca gtggctgggg gtgatttgct attagagccc  
2760

gccttgctc agtattctga tgtgctgtcc actactcatg ctgcttcaga gacgctggaa  
2820

ttggtagtg aatctggtgt tctttataaa acgcttatgt tttctcaagt tgaaccacc  
2880

gcagtgatg ccatgatgca tgcacgttct tcagggcctg aaccttctta tgccttgtct  
2940

ataatgagg gctcccaaca catcttcact gtttcttaca gttctgcaat acctgtgcat  
3000

attctgtgg gtgtaactta tcagggttcc ttatttagcg gccctagcca tataccaata  
3060

ctaagtctt cgtaataaac cccaactgca tcattactgc agcctactca tgccctctct  
3120

gtgatgggg aatggctctg agcctcttct gatagtgaat ttcttttacc tgacacagat

eolf-seql-S000001.txt

3180

rggctgacag cccttaacat ttcttcacct gtttctgtag ctgaatttac atatacaaca  
3240

ctgtgtttg gtgatgataa taaggcgctt tctaaaagtg aaataatata tggaaatgag  
3300

ctgaactgc aaattccttc tttcaatgag atggtttacc cttctgaaag cacagtcag  
3360

ccaacatgt atgataatgt aaataagttg aatgcgtctt tacaagaaac ctctgtttcc  
3420

tttctagca ccaagggcat gtttccaggg tcccttgctc ataccaccac taagggtttt  
3480

atcatgaga ttagtcaagt tccagaaaat aacttttcag ttcaacctac acatactgtc  
3540

ctcaagcat ctggtgacac ttcgcttaaa cctgtgctta gtgcaaactc agagccagca  
3600

cctctgacc ctgcttctag tgaaatgta tctccttcaa ctgagctctt attttatgag  
3660

cctcagctt ctttttagtac tgaagtattg ctacaacctt cttttcaggc ttctgatgtt  
3720

acaccttgc ttaaaactgt tcttccagct gtgccagtg atccaatatt ggttgaaacc  
3780

caaagttg ataaaattag ttctacaatg ttgcatctca ttgtatcaaa ttctgcttca  
3840

gtgaaaaca tgctgcactc tacatctgta ccagtttttg atgtgtcgcc tacttctcat  
3900

tgcaactctg cttcacttca aggtttgacc atttcctatg caagtgagaa atatgaacca  
3960

ttttgttaa aaagtgaag ttcccaccaa gtggtacctt ctttgtacag taatgatgag  
4020

tgttccaaa cggccaattt ggagattaac caggcccatc cccaaaagg aaggcatgta  
4080

ttgctacac ctgttttatc aattgatgaa ccattaaata cactaataaa taagcttata  
4140

attccgatg aaattttaac ctccaccaa agttctgtta ctggttaagggt atttgctggt  
4200

ttccaacag ttgcttctga tacatttgta tctactgatc attctgttcc tataggaaat  
4260

## eolf-seql-S000001.txt

ggcatgttg ccattacagc tgtttctccc cacagagatg gttctgtaac ctcaacaaag  
4320

tgctgtttc cttctaaggc aacttctgag ctgagtcata gtgccaaatc tgatgccggt  
4380

tagtgggtg gtggtgaaga tgggtgacact gatgatgatg gtgatgatga tgatgacaga  
4440

atagtgatg gcttatccat tcataagtgt atgtcatgct catcctatag agaatacacg  
4500

aaaaggtaa tgaatgattc agacacccac gaaaacagtc ttatggatca gaataatcca  
4560

tctcatact cactatctga gaattctgaa gaagataata gagtcacaag tgtatcctca  
4620

acagtcaaa ctggtatgga cagaagtcct ggtaaatacac catcagcaaa tgggctatcc  
4680

aaaagcaca atgatggaaa agaggaaaat gacattcaga ctggtagtgc tctgcttctt  
4740

tcagccctg aatctaaagc atgggcagtt ctgacaagtg atgaagaaag tggatcaggg  
4800

aaggtaacct cagatagcct taatgagaat gagacttcca cagatttcag ttttgcagac  
4860

ctaataaaa aagatgctga tgggatacctg gcagcaggtg actcagaaat aactcctgga  
4920

tcccacagt cccaacatc atctgttact agcgagaact cagaagtgtt ccacgtttca  
4980

aggcagagg ccagtaatag tagccatgag tctcgtattg gtctagctga ggggttgga  
5040

ccgagaaga aggcagttat accccttgtg atcgtgtcag ccttgacttt tatctgtcta  
5100

tggttcttg tgggtattct catctactgg aggaaatgct tccagactgc acacttttac  
5160

tagaggaca gtacatcccc tagagttata tccacacctc caacacctat ctttccaatt  
5220

agatgatg tcggagcaat tccaataaag cactttccaa agcatgttgc agatttacat  
5280

aaagtagtg ggtttactga agaatttgag aactgaaaag agttttacca ggaagtgcag  
5340

eolf-seql-S000001.txt

igctgtactg ttgacttagg tattacagca gacagctcca accacccaga caacaagcac  
5400

agaatcgat acataaatat cgttgcctat gatcatagca gggttaagct agcacagctt  
5460

ictgaaaagg atggcaaact gactgattat atcaatgccca attatgttga tggctacaac  
5520

gacccaaaag cttatatattgc tgcccaaggc ccactgaaat ccacagctga agattttctgg  
5580

gaatgatat gggaacataa tgtggaagtt attgtcatga taacaaacct cgtggagaaa  
5640

gaaggagaa aatgtgatca gtactggcct gccgatggga gtgaggagta cgggaacttt  
5700

tgggtcactc agaagagtgt gcaagtgcct gcctattata ctgtgaggaa ttttactcta  
5760

gaaacacaa aaataaaaaa gggctcccag aaaggaagac ccagtggacg tgtggtcaca  
5820

agtatcact acacgcagtg gcctgacatg ggagtaccag agtactccct gccagtgcgtg  
5880

cctttgtga gaaaggcagc ctatgccaaag cgccatgcag tggggcctgt tgtcgtccac  
5940

gcagtgcgtg gagttggaag aacaggcaca tatattgtgc tagacagtat gttgcagcag  
6000

ttcaacacg aaggaactgt caacatatatt ggcttcttaa aacacatccg ttcacaaaga  
6060

attatattgg taaaaactga ggagcaatat gtcttcattc atgatacact ggttgaggcc  
6120

tacttagta aagaaactga ggtgctggac agtcatattc atgcctatgt taatgcactc  
6180

tcattcctg gaccagcagg caaaacaaag ctagagaaac aattccagct cctgagccag  
6240

caaataac agcagagtga ctattctgca gccctaaagc aatgcaacag ggaaaagaat  
6300

gaacttctt ctatcatccc tgtggaaaga tcaaggggtg gcatttcac cctgagtgga  
6360

aaggcacag actacatcaa tgcctcctat atcatgggct attaccagag caatgaattc  
6420

tcattaccc agcacctct ccttcatacc atcaaggatt tctggaggat gatatgggac

eolf-seql-S000001.txt

6480

ataatgccc aactggtggt tatgattcct gatggccaaa acatggcaga agatgaattt  
6540

tttactggc caaataaaga tgagcctata aattgtgaga gctttaaggt cactcttatg  
6600

ctgaagaac acaaagtgtct atctaataag gaaaaactta taattcagga ctttatctta  
6660

aaagctacac aggatgatta tgtacttgaa gtgaggcact ttcagtgtcc taaatggcca  
6720

atccagata gcccattag taaaactttt gaacttataa gtgttataaa agaagaagct  
6780

ccaataggg atgggcctat gattgttcat gatgagcatg gaggagtgc ggcaggaact  
6840

tctgtgctc tgacaaccct tatgcaccaa ctagaaaaag aaaattccgt ggatgtttac  
6900

aggtagcca agatgatcaa tctgatgagg ccaggagtct ttgctgacat tgagcagtat  
6960

agtttctct acaaagtgat cctcagcctt gtgagcaca ggcaggaaga gaatccatcc  
7020

cctctctgg acagtaatgg tgcagcattg cctgatggaa atatagctga gagcttagag  
7080

ctttagttt aacacagaaa ggggtggggg gactcacatc tgagcattgt tttcctcttc  
7140

taaaattag gcaggaaaat cagtctagtt ctgttatctg ttgatttccc atcacctgac  
7200

gtaactttc atgacatagg attctgccgc caaatttata tcattaacaa tgtgtgcctt  
7260

ttgcaagac ttgtaattta cttattatgt ttgaactaaa atgattgaat tttacagtat  
7320

tctaagaat ggaattgtgg tatttttttc tgtattgatt ttaacagaaa atttcaattt  
7380

tagaggtta ggaattccaa actacagaaa atgtttgttt ttagtgtcaa atttttagct  
7440

tattttag caattatcag gtttgctaga aatataactt ttaatacagt agcctgtaaa  
7500

aaaacactc ttccatatga tattcaacat ttacaactg cagtattcac ctaaagtaga  
7560

## eolf-seql-S000001.txt

ataatctgt tacttattgt aaatactgcc ctagtgtctc catggaccaa atttatattt  
7620

taattgtag atttttatat ttactactg agtcaagttt tctagttctg tgtaattggt  
7680

agtttaatg acgtagttca ttagctgggc ttactctacc agttttctga cattgtattg  
7740

gttacctaa gtcattaact ttgtttcagc atgtaatttt aacttttgtg gaaaatagaa  
7800

taccttcat ttgaaagaa gtttttatga gaataacacc ttaccaaaca ttgttcaa  
7860

gtttttatc caaggaattg caaaaataaa tataaatatt gccattaaaa aaaaaaaaaa  
7920

aaaaaaaaa aaaaaaaaaa a  
7941

210> 26

211> 1530

212> DNA

213> Homo sapiens

400> 26

cgcagaact gccacgtggg gatgagattt gctgggctgg tagcggcggc tgctgcggga  
60

gtcccgccc acgtgaagcc agcctaactg agctctggac tttggggaca gctgtcagtg  
120

cctaggccg caggacacca tgaagcaact gccagtcttg gaacctggag acaagcccag  
180

aaagcaaca tggtacacct tgactgtccc tggagacagc ccctgtgctc gagttggcca  
240

agctgttca tatttaccac cagttggtaa tgccaagaga ggaaggtct tcattgttgg  
300

ggagcaaat ccaaacagaa gcttctcaga cgtgcacacc atggatctgg gaaaacacca  
360

tgggactta gatacctgca agggcctctt gccccggtat gaacatgcta gcttcattcc  
420

tcctgcaca cctgaccgta tctgggtatt tggaggtgcc aaccaatcag gaaatcgaaa  
480

tgctacaa gtctgaatc ctgaaaccag gacgtggacc acgccagaag tgaccagccc  
540



## eolf-seql-S000001.txt

ccaccatcc ccaagaacat tccacacatc atcggcagcc attggaaacc agctatatgt  
600

tttgggggc ggagagagag gtgcccagcc cgtgcaggac acgaagctgc atgtgtttga  
660

gcaaacact ctgacctggt cacagccaga gacacttgga aatcctccat ctccccggca  
720

ggtcattgt atggtggcag cagggacaaa gctcttcac caggaggct tggcggggga  
780

agattctat gatgacctcc actgcattga tataagtgc atgaaatggc agaagctaaa  
840

ccactggg gctgctccag caggctgtgc tgcccactca gctgtggcca tgggaaaaca  
900

gtgtacatc tttggtggaa tgactcctgc aggagcactg gacacaatgt accagtatca  
960

acagaagag cagcattgga ccttgcttaa atttgatact cttctacccc ctggacgatt  
1020

gaccattcc atgtgtatca ttccatggcc agtgacgtgt gcttctgaga aagaagattc  
1080

aactctctc actctgaacc atgaagctga gaaagaggat tcagctgaca aagtaatgag  
1140

cacagtggg gactcacatg aggaaagcca gactgctaca ctgctctggt tgggtgtttg  
1200

gggatgaat acagaagggg aaatctatga cgattgtatt gtgactgtag tggactaata  
1260

aaccacat ttttattacc tgtcagttac tttcagaata gttaagtaaa acattagctg  
1320

tttatacct ccaaaatata ttctgcatta tataatctgtt tttctcctac tttggtaggt  
1380

aagaaacta atgcaaataa ttcttatgtg cactaaacct tgctatatattg cctctcaaaa  
1440

aaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa  
1500

aaaaaaaaa aaaaaaaaaa aaaaaaaaaa  
1530

210> 27  
211> 2314

eolf-seql-S000001.txt

:212&gt; DNA

:213&gt; Homo sapiens

:400&gt; 27

gcgcgcac gagcgagctc ttgcagcctc cccgcccctc ccgcaacgct cgaccccagg  
60

ttcccccg ctcgcctgcc cgccatggcc gacaaggaag cagccttcga cgacgcagtg  
120

aagaacgag tgatcaacga ggaatacaaa atatggaaaa agaacacccc ttttctttat  
180

atttggtga tgacccatgc tctggagtgg cccagcctaa ctgcccagtg gcttccagat  
240

taaccagac cagaagggaa agatttcagc attcatcgac ttgtcctggg gacacacaca  
300

cggatgaac aaaaccatct tgttatagcc agtgtgcagc tccctaataga tgatgctcag  
360

ttgatgcgt cacactacga cagtgagaaa ggagaatttg gaggttttgg ttcagttagt  
420

gaaaaattg aaatagaaat caagatcaac catgaaggag aagtaaacag ggcccgttat  
480

tgccccaga acccttgtat catcgcaaca aagactcctt ccagtgatgt tcttgtcttt  
540

actatacaa aacatccttc taaaccagat ctttctggag agtgcaaccc agacttgctg  
600

tccgtggac atcagaagga aggctatggg ctttcttgga acccaaactc cagtgggcac  
660

tacttagtg cttcagatga ccataccatc tgcctgtggg acatcagtgc cgttccaaag  
720

agggaaaag tggtagatgc gaagaccatc tttacagggc atacggcagt agtagaagat  
780

tttcttggc atctactcca tgagtctctg tttgggtcag ttgctgatga tcagaaactt  
840

tgatttggg atactcggtc aaacaatact tccaaaccaa gccactcagt tgatgctcac  
900

ctgctgaag tgaactgcct ttctttcaat ctttatagtg agttcattct tgccacagga  
960

cagctgaca agactgttgc cttgtgggat ctgagaaatc tgaaacttaa gttgcattcc  
1020

eolf-seql-S000001.txt

ttgagtcac ataaggatga aatattccag gttcagtggg cacctcacia tgagactatt  
1080

agcttcca gtggtactga tcgcagactg aatgtctggg atttaagtaa aattggagag  
1140

acaatccc cagaagatgc agaagacggg ccaccagagt tggtgtttat tcatgggtgg  
1200

atactgcca agatatctga tttctcctgg aatcccaatg aaccttgggt gatttgttct  
1260

atcagaag acaatatcat gcaagtgtgg caaatggcag agaacattta taatgatgaa  
1320

ccctgaag gaagcgtgga tccagaagga caagggtcct agatatgtct ttacttgttg  
1380

gattttaga ctcccccttt tttctctcaa cctgagagt gatttaacac tggttttgag  
1440

agacttta ttcagctatc cctctatata ataggtagca ccgataatgc tattagccca  
1500

ccgtgggt ttttctaaat attaataggg gggcttgatt caacaaagcc acagacttaa  
1560

gttgaaatt ttcttcagga attttctagt aaccaggtc taaagtagct acagaaagg  
1620

atattatg tgtgattatt tttcttctta tgcctatacc ccaagttttt cagactcatt  
1680

agtaaagg ctagagttag taaggaatag agccaaatga ggtaggtgtc tgagccatga  
1740

atataata ctgaaagatg tcacttttat tcaggaaata gggggagttc aagtcgtata  
1800

ttcttact cgaaaatctt gacacctgac tttccaggat gcacattttc atacgtagac  
1860

gtttcttc ttggtttctt cagttaagtc aaaacaacac gttcctcttt ccccatatat  
1920

atatattt ttgctcgta gtgtatttct tgagctgttt tcatgttggt tatttcctgt  
1980

gtgaaatg gtgttttttt ttttgttggt ggtttttttt tttttttttt aacttgggac  
2040

ccaagttg taaagatgta tggttttacc tgacagttat accacaggta gactgtcaag  
2100

gagaagag tgaatcaata acttgtattt gttttaaaaa ttaaattaat ccttgataag

eolf-seql-S000001.txt

2160

gttgctttt ttttttagg agttagtcct tgaccactag tttgatgcc a tctccatttt  
2220

ggtgacctg tttcaccagc aggcctgtta ctctccatga ctaactgtgt aagtgttaa  
2280

atggaataa attgcttttc tacataaaaa aaaa  
2314

210&gt; 28

211&gt; 2848

212&gt; DNA

213&gt; Homo sapiens

400&gt; 28

cttctcccc ggcggttagt gctgagagtg cggagtgtgt gctccgggct cggaacacac  
60

tttattatt.aaaaaatcca aaaaaaatct aaaaaaatct tttaaaaaac cccaaaaaaa.  
120

ttacaaaaa atccgcgtct cccccgccgg agacttttat tttttttctt cctcttttat  
180

aaataaccc ggtgaagcag ccgagaccga cccgcccgcc cgcggccccg cagcagctcc  
240

agaaggaac caagagaccg aggccttccc gctgcccgga cccgacaccg ccaccctcgc  
300

ccccgccgg cagccggcag ccagcggcag tggatcgacc ccgttctgcg gccgttgagt  
360

gttttcaat tccggttgat ttttgctcct ctgcgcttgc tccccgctcc cctccccccg  
420

ctccggccc ccagccccgg cactcgtctt cctcctctca cggaaaggte gcggcctgtg  
480

cctgcgggc agccgtgccg agatgaaccc cagtgcccc agctaccca tggcctcgct  
540

tacgtgggg gacctccacc ccgacgtgac cgaggcgatg ctctacgaga agttcagccc  
600

jccgggccc atcctctcca tccgggtctg cagggacatg atcaccgcc gctccttggg  
660

acgcgtat gtgaacttcc agcagccggc ggacgcggag cgtgctttgg acaccatgaa  
720

ttgatgtt ataaaggga agccagtacg catcatgtgg tctcagcgtg atccatcact

eolf-seql-S000001.txt

780

icgcaaaagt ggagtaggca acatattcat taaaaatctg gacaaatcca ttgataataa  
840

agcactgtat gatacatttt ctgcttttgg taacatcctt tcatgtaagg tggtttgtga  
900

igaaaatggt tccaagggct acggatttgt acactttgag acgcaggaag cagctgaaag  
960

agctattgaa aaaatgaatg gaatgctcct aatgatcgc aaagtatttg ttggacgatt  
1020

aagtctcgt aaagaacgag aagctgaact tggagctagg gcaaaagaat tcaccaatgt  
1080

tacatcaag aattttggag aagacatgga tgatgagcgc cttaaggatc tctttgggcc  
1140

gccttaagt gtgaaagtaa tgactgatga aagtggaaaa tccaaaggat ttggatttgt  
1200

agctttgaa aggcatgaag atgcacagaa agctgtggat gagatgaacg gaaaggagct  
1260

aatggaaaa caaatttatg ttggtcgagc tcagaaaaag gtggaacggc agacggaact  
1320

aagcgcaaa tttgaacaga tgaaacaaga taggatcacc agataccagg gtgttaatct  
1380

tatgtgaaa aatcttgatg atggtattga tgatgaacgt ctccggaaag agttttctcc  
1440

tttgggtaca atcactagtg caaaggttat gatggagggt ggtcgcagca aagggtttgg  
1500

tttgtatgt ttctcctccc cagaagaagc cactaaagca gttacagaaa tgaacggtag  
1560

attgtggcc acaaagccat tgtatgtagc tttagctcag cgcaaagaag agcgccaggc  
1620

cacctcact aaccagtata tgcagagaat ggcaagtgtg cgagctgttc ccaaccctgt  
1680

atcaacccc taccagccag cacctccttc aggttacttc atggcagcta tcccacagac  
1740

cagaaccgt gctgcatact atcctcctag ccaagttgct caactaagac caagtcctcg  
1800

tggactgct cagggtgccg gacctcatcc attccaaaat atgcccggtg ctatccgccc  
1860

## eolf-seql-S000001.txt

igctgctcct agaccaccat ttagtactat gagaccagct tcttcacagg ttccacgagt  
1920

atgttcaaca cagcgtgttg ctaacacatc aacacagaca atgggtccac gtctgcagc  
1980

gcagccgct gcagctactc ctgctgtccg caccgttcca cagtataaat atgctgcagg  
2040

gttcgcaat cctcagcaac atcttaatgc acagccacaa gttacaatgc aacagcctgc  
2100

gttcattgta caaggtcagg aacctttgac tgcttccatg ttggcatctg cccctcctca  
2160

gagcaaaaag caaatgttgg gtgaacggct gtttcctctt attcaagcca tgcaccctac  
2220

cttgctggt aaaatcactg gcatgttggt ggagattgat aattcagaac ttcttcatat  
2280

ctcgagtct ccagagtcac tccgttctaa ggttgatgaa gctgtagctg tactacaagc  
2340

caccaagct aaagaggctg cccagaaagc agttaacagt gccaccggtg ttccaactgt  
2400

taaaattga tcaggggacca tgaaaagaaa cttgtgcttc accgaagaaa aatatctaaa  
2460

atcgaaaaa cttaaataatt atggaaaaaa aacattgcaa aatataaaat aaataaaaaa  
2520

ggaaaggaa actttgaacc ttatgtaccg agcaaagcc aggtctagca aacataatgc  
2580

agtcctaga ttacttattg atttaaaaac aaaaaaacac aaaaaatagt aaaatataaa  
2640

acaaattaa tgttttatag accctgggaa aaagaatttt cagcaaagta caaaaattta  
2700

agcattcct ttctttaatt ttgtaattct ttactgtgga atagctcaga atgtcagttc  
2760

gttttaagt aacagaattg ataactgagc aaggaaacgt aatttggatt ataaaattct  
2820

gctttaata aaaattcctt aaacagtg  
2848

210> 29

211> 2424

eolf-seql-S000001.txt

:212&gt; DNA

:213&gt; Homo sapiens

:400&gt; 29

:ctggaactc tagcacgccg agtgaacttg aatctttggc tatttaagga ggactggggtt  
60.gttgtgaag ttgcggtgat ccagcgcaga gccccgtcct gattgatcgc atcgcggggc  
120.cagatgact gtaaaatgaa tagatgaaat tcttgcttct cgaagatddd cttgggcatc  
180.cccggaaaag tgcgttttaa ggcgaagtca tgatgtattc tcccatctgt ctactcagg  
240.tgaatttca ccattcatg gaagcacttc ttccacatgt ccgtgcaatt gcctatactt  
300.gttcaacct gcaggctcga aaacgcaagt actttaaaaa gcatgagaag cgaatgtcaa  
360ggatgaaga aagagcagtc aaagatgagc ttctcagtga aaagcctgaa atcaaacaga  
420gtgggcatc caggctcctt gccaaactgc gcaaagatat tcgccaggag tatcgagagg  
480ctttgtgct caccgtgact ggcaagaagc acccgtgctg tgtcttatcc aatcccgacc  
540gaagggtaa gattaggaga atcgactgcc tgcgacaggc agacaaagtc tggcgtctgg  
600tctagtcac ggtgatcctg ttcaaaggca tccccttgga aagtaccgat ggagagcggc  
660catgaaatc cccacattgc acaaaccag cactttgtgt ccagccacat catatcacag  
720atcagttaa ggagcttgat ttgtttttgg catactacgt gcaggagcaa gattctggac  
780atcaggaag tccaagccac aatgatcctg ccaagaatcc tccaggttac cttgaggata  
840ttttgtaaa atctggagtc ttcaatgtat cagaacttgt aagagtatcc agaacgcca  
900aaccaggga aactggagtc aacttcccaa ttggagaaat cccaagccaa ccatactatc  
960tgacatgaa ctcggggggc aatcttcaga ggtctctgtc ttctccacca agcagcaaaa  
1020

eolf-seql-S000001.txt

acccaaaac tatatccata gaygaaaata tggaaccaag tcctacagga gacttttacc  
1080

ctctccaag ttcaccagct gctggaagtc gaacatggca cgaaagagat caagatatgt  
1140

ttctccgac tactatgaag aagcctgaaa agccattgtt cagctctgca tctccacagg  
1200

tttttcccc aagactgagc acttttcccc agcaccacca tcccggaata cctggagttg  
1260

acacagtgt catctcaact cgaactccac ctccaccttc accgttgcca tttccaacac  
1320

agctatcct tcctccagcc ccacgagct acttttctca tccaacaatc agatatactc  
1380

ccacctgaa tcctcaggat actctgaaga actatgtacc ttcttatgac ccacccagtc  
1440

acaaaccag ccagtcctgg tacctgggct agcttggttc ctttccaagt gtcaaatagg  
1500

cacccatct taccggccaa tgtccaaaat tacggtttga acataattgg agaacccttc  
1560

ttcaagcag aaacaagcaa ctgagggaaa aagaaacaca acaatagttt aagaaatttt  
1620

tttttaaat aaaaaaaagg aaaagaggaa gactggacaa aacaacacaa aggcagaaag  
1680

aaagaaact gaagaaagaa gataatagac cagcaattgc agcacttaca atcactaatt  
1740

cttaaggt taaactgtaa tgacataaaa aggggtcgatg atatttcact gatggtagat  
1800

gcagccct gcaacgtagc ctttgttaca tgaagtccgc tgggaaatag atgttctgtc  
1860

ctatgacaa tatattttaaa ctgactttct agatgcctta atatttgcat gataagctag  
1920

ttattgggt ttagtattct tggtgtttac gcatggaatc actattcctg gttatctcac  
1980

aacgaaggc taggaggcgg cgtcagagat gctgggtgac agagccatga gccagccatt  
2040

ataagcac tctgatttct aaaagttaaa aaaaatatat gaaatctctg tagcctttag  
2100

atcagtac agatttatta aatttcggcc cttaaccag cttttccag tgtgtaaccc



eolf-seql-S000001.txt

2160

jttagaat cttaaaaaaa gaaaaaatga aaaaaaaagg aaaaaaagaa aaaaggaaaa  
2220

iacagtttg aacacaaagg ctctatggaa gaaatgcctc tatgtaggtg aagtgttctc  
2280

tgcatgca acagtaaaaa ttaatataat attttcccca caaaagaaac acttaacaga  
2340

igcaagtgc aatttattaa atttatattc ttaaaggggg aattcatgga ttattaaggt  
2400

ttcaggcc cttggggact ctt  
2424

!10&gt; 30

!11&gt; 838

!12&gt; DNA

!13&gt; Homo sapiens

!00&gt; 30

ttcttttc cggctggaac catggagggt gtagaagaga agaagaagga gggttcctgct  
60

gccagaaa cccttaagaa aaagcgaagg aatttcgcag agctgaagat caagcgctg  
120

aaagaagt ttgcccaaaa gatgcttcga aaggcaagga ggaagcttat ctatgaaaa  
180

aaagcact atcacaagga atataggcag atgtacagaa ctgaaattcg aatggcgagg  
240

ggcaagaa aagctggcaa cttctatgta cctgcagaac ccaaattggc gtttgtcatc  
300

aatcagag gtatcaatgg agtgagccca aaggttcgaa aggtgttgca gcttcttcgc  
360

tcgtcaaa tcttcaatgg aacctttgtg aagctcaaca aggcttcgat taacatgctg  
420

gattgtag agccatatat tgcattgggg tacccaatc tgaagtcagt aatgaacta  
480

ctacaagc gtggttatgg caaaatcaat aagaagcgaa ttgctttgac agataacgct  
540

gattgctc gatctcttgg taaatacggc atcatctgca tggaggattt gattcatgag  
600

ctatactg ttggaaaacg cttcaaagag gcaaataact tcctgtggcc cttcaaattg

eolf-seql-S000001.txt

660

ttctccac gaggtggaat gaagaaaaag accaccatt ttgtagaagg tggagatgct  
720

jcaacaggg aggaccagat caacaggctt attagaagaa tgaactaagg tgtctaccat  
780

attatTTTT ctaagctggt tggtaataa acagtacctg ctctcaaatt gaaaaaaa  
838

!10&gt; 31

!11&gt; 3514

!12&gt; DNA

!13&gt; Homo sapiens

!00&gt; 31

catctggc cagccccgc cctcctccc ggcgtcagcc cgccagaggc cgcgcggggc  
60

gggcttcg gccgatcagc ccgggaggcc ccgccgcgcc cccttgggcc gcgcgccct  
120

tcacagtg gaagaggcgc ccgcgtgcg ctgcccgag gagccgtcgc gcgccgctt  
180

tggttcggc tggttcctgc cagctcgagg aaaaaacacg cgtgcgcgcg gcgggcgagc  
240

gtcgcgcg cctcagtcgc cagcgcggg cgcagtcgc ctttttcgg agcagactgg  
300

gcgggtgct agtcggtagc agcggccgcc gcagcggctc cgcactggcg aaccgagggc  
360

aaaaaggc ggggttgacg gctttttggt aggagtgggc tggaccggac gccagagaca  
420

ggctccca aggcaagagg gactgtggcc ctgcgtcggc tctgctcgga actgctgacc  
480

aggaattt acgccccttc gtttttctct tctgattctt ctcttctccc aagcccgct  
540

cctcacgc gtggcctctc tccttgccgg gagggccgcg atggagggtc cggccaggct  
600

cccatgtg ccgccgcat tgttcccctc cgctcccgt actttagcct cccgcagcct  
660

ccattgg cggccgcggc cgccgcggca gctagccccg ctctccctt cgctcgctcc  
720

gctccgcc cggcaggggg cgcgccgggc ccagcggcac gtcaccgccc agcagccctc

eolf-seql-S000001.txt

780

gattggcg ggcggggcgg ctataaaggg agggcgcagg cggcgcccgg atctcttccg  
840

gccatttt aaatccagct ccatacaacg ctccgccgcc gctgctgccg cgacccggac  
900

cgcgccag cccccccctg ccgacagctc cgtcactatg gaggatatga acgagtacag  
960

atatagag gaattcgcag agggatccaa gatcaacgcg agcaagaatc agcaggatga  
1020

gtaaaatg tttattggag gcttgagctg ggatacaagc aaaaaagatc tgacagagta  
1080

tgctctga tttggggaag ttgtagactg cacaattaaa acagatccag tcaactgggag  
1140

caagagga tttggatttg tgcttttcaa agatgctgct agtggtgata aggttttgga  
1200

tgaaagaa cacaaactgg atggcaaatt gatagatccc aaaagggcca aagctttaaa  
1260

ggaaagaa cctcccaaaa aggtttttgt gggtaggattg agcccggata cttctgaaga  
1320

aaattaaa gaatatatttg gagccttttg agagattgaa aatattgaac ttcccatgga  
1380

caaaaaca aatgaaagaa gaggattttg ttttatcaca tatactgatg aagagccagt  
1440

aaaaattg ttagaaagca gataccatca aattgggttct gggaagtgtg aaatcaaagt  
1500

cacaaccc aaagaggtat ataggcagca acagcaacaa caaaaaggtg gaagaggtgc  
1560

cagctggt ggacgaggtg gtacgagggg tcgtggccga ggtcagggcc aaaactggaa  
1620

aaggattt aataactatt atgatcaagg atatggaaat tacaatagtg cctatgggtg  
1680

atcaaaac tatagtggct atggcggata tgattatact gggataaact atgggaacta  
1740

gatatgga cagggatatg cagactacag tggccaacag agcacttatg gcaaggcatc  
1800

gagggggt ggcaatcacc aaaacaatta ccagccatac taaaggagaa cattggagaa  
1860

## eolf-seql-S000001.txt

icagcggga acttcattgc aggccgtgtg tcaccctgac cacgtctatc tctgggggtc  
1920

acgttgcg ggcagagcgc aaggcataca ccagaaaacg ctgtcctgtg gaggagatgt  
1980

aaagtaacc catcttgacg gacgacattg aagattgggc ttctgttgat ctaagatgat  
2040

ttttgtaa aagactttct agtgtacaag acaccattgt gtccaactgt atatagctgc  
2100

iattagttt tctttgtttt tactttgtcc ttgctatct gtgttatgac tcaatgtgga  
2160

tgtttata cacattttat ttgtatcatt tcatgttaaa cctcaaataa atgcttcctt  
2220

gtgattgc ttttctgcgt caggtactac atagctctgt aaaaaatgta atttaaaata  
2280

caataatt aaggcacagt tgattttgta gagtattggc ccatacagag aaactgtggc  
2340

tttataaa tagccagcca gcgtcaccct cttctccaat ttgtaggtgt attttatgct  
2400

taaggctt catcttctcc ctgtaactga gatttctacc acacctttga acaatgttct  
2460

cccttctg gttatctgaa gactgtcctg aaaggaagac ataagtgttg tgattagtag  
2520

gctttgta atcataacac aatgagtaat tcttgataa aagttcagat acaaaaggag  
2580

ctgtaaaa ctggtaggag ctatggttta agagcattgg aagtagttac aactcaagga  
2640

ttggtaga aaggtagag tttggtcgaa aaattaaaat agtggcaaaa taagatttag  
2700

gtgttttc tcagagccgc cacaagattg acaaaaatgt tttctgtttg ggcctcctga  
2760

aagttgta ttagctgtta atgctctgtg agtttagaga aaagtcttga tagtaaatct  
2820

tttttgac acagtgcag aactaagtag ttaaataattt acatattcag aaaggaatag  
2880

gaaaaggt atcttggtta tgacaaagtc attacaaatg tgactaagtc attacaaatg  
2940

eolf-seql-S000001.txt

gactgagtc attacagtgg accctctggg tgcattgaaa agaatccggt ttatatccag  
3000

tttcagagg acctggaata ataataagct ttggattttg cattcagtgt agttggattt  
3060

gggaccttg gcctcagtgt tatttactgg gattggcata cgtgttcaca ggcagagtag  
3120

tgatctcac acaacgggtg atctcacaaa actggtaagt ttcttatgct catgagccct  
3180

ccttttttt ttttaatttg gtgcctgcaa ctttcttaac aatgattcta cttcctgggc  
3240

atcacatta taatgctctt ggcctctttt ttgctgctgt tttgctattc ttaaacttag  
3300

ccaagtacc aatgttggct gttagaaggg attctgttca ttcaacatgc aactttaggg  
3360

atggaagta agttcatttt taagtttgtt ggtcagtagg tgcggtgtct agggtagtga  
3420

ccctgtaag ttcaaattta tgattaggtg acgagttgac attgagattg tccttttccc  
3480

cgatcaaaa aaatgaataa agccttttta aacg  
3514

?10> 32

?11> 1186

?12> DNA

?13> Homo sapiens

!00> 32

:agttcaga tgggtctaacc attgttctat atgtgcattt tagttaatat tgtgtattaa  
60

rgataagtc ttaatgctca aagtatgtta aaaatagatg tagtaaatca gtccctttgt  
120

atgtcctt ttgttagttt ttaggaaggc ctgtcctctg ggagtgacct ttattagttc  
180

:cccttgga gctagacatc ctgtacttag tcacggggat ggtggaagag ggagaagagg  
240

gggtgaag ggaagggtc tttgctagta tctccatata tagacgatgg ttttagatga  
300

accacagg tctacaagag cgttttttagt aaagtgcctg tgttcattgt ggacaaagtt  
360

eolf-seql-S000001.txt

ttattttgc aacatctaag ctttacgaat ggggtgacaa cttatgataa aaactagagc  
420

agtgaatta gcctatttgt aaataccttt gttataattg ataggataca tcttggacat  
480

gaattgtta agccacctct gagcagtgtg tgtcaggact tgttcattag gttggcagca  
540

aggggcaga aggaattata caggtagaga tgtatgcaga tgtgtccata tatgtccata  
600

ttacatttt gatagccatt gatgtatgca tctcttggct gtactataag aacacattaa  
660

tcaatggaa atacactttg ctaatatattt aatggatatag atctgctaag gaattctctt  
720

aaacatac tgtattctgt tgcgtgtgtt ttcattttta attgagcatt aagggaatgc  
780

gcatttaaa tcagaactct gccaatgctt ttatctagag gcgtgttgcc atttttgtct  
840

ttatgaaat ttctgtccca agaaaggcag gattacatct tttttttttt ttttagcagt  
900

tgagttggg ttagtgtatt cttggttatc agaataactca tatagctttg ggattttgaa  
960

tggtaaata ttcattgatgt gtgaaaaatc atgatacata ctgtacagtc tcagtcccat  
1020

taattggat gttgtgccta cacacaggat ctagaagaat atgtcaaact ataaactgct  
1080

ttgattgtg aatgactttg ttctttgctt gtgtttttca atttcctata atgcacatac  
1140

tacttttaa aaaataaagg ttatttttaa agcctgtatt aagccc  
1186

:10> 33

:11> 606

:12> DNA

:13> Homo sapiens

00> 33

acgcaaga cgccgggcct acagcgggag cgtgaggaaa gccgtgcgtt gcgttccaag  
60

ttctgtga gcccgcgag tatacccat gagcaaagct caccctccc agttgaaaaa  
120

eolf-seql-S000001.txt

tttatggac aagaagttat cattgaaatt aaatggtggc agacatgtcc aaggaatatt  
180

cggggattt gatcccttta tgaaccttgt gatagatgaa tgtgtggaga tggcgactag  
240

ggacaacag aacaatattg gaatggtggt aatacgagga aatagtatca tcatgttaga  
300

gccttggaa cgagtataaa taatggctgt tcagcagaga aacccatgtc ctctctccat  
360

ggcctggtt ttactatgat gtaaaaatta ggtcatgtac attttcatat tagacttttt  
420

ctaaataaa cttttgtaat agtcaaaaat gctttctcag atgttctgaa tatagaatat  
480

agctctcat tccagttttt tctaacaatga attttcctgg ttgacattga tttcaaaggg  
540

tttatgcat taaagtgaag gaatcttatt aaatgcgaaa aaaaaaaaaa aaaaaaaaaa  
600

aaaaa  
606

210> 34

211> 1579

212> DNA

213> Homo sapiens

100> 34

cccttcgcg tactgacgga aacactggcg gcacatattg aggccgtatt tcaggatcag  
60

ggccggttc gaacacacgc gagaagagca aagaagttaa aagagaagtg tctgtgtggc  
120

cttccacg tgggtgaagg actgtgccag ctgagagggt gtagagcagg aagctgcctg  
180

acctccat ttatttggtg aaaaaccgcc gcccttaaga gagcaagtcg agggccgtgt  
240

gagttgga ggagagaaat gaaattttgg aagagtcagc agaagatcgt cagtatttaa  
300

acatcaca tcatgcgtga gtacaagcta gtggtccttg gttcaggagg cgttgggaag  
360

tgctctga cagttcagtt tgttcaggga atttttgttg aaaaatatga cccaacgata  
420

eolf-seql-S000001.txt

aagattcct acagaaagca agttgaagtc gattgccaac agtgtatgct cgaaatcctg  
480

atactgcag ggacagagca atttacagca atgagggatt tgtatatgaa gaacggccaa  
540

gttttgcac tagtatattc tattacagct cagtccacgt ttaacgactt acaggacctg  
600

gggaacaga ttttacgggt taaggacacg gaagatgttc caatgatttt ggttggaat  
660

aatgtgacc tggaagatga gcgagtagtt ggcaaagagc agggccagaa tttagcaaga  
720

agtgggtgta actgtgcctt tttagaatct tctgcaaagt caaagatcaa tgttaatgag  
780

tattttatg acctggtcag acagataaat aggaaaacac cagtggaaaa gaagaagcct  
840

aaaagaaat catgtctgct gctctaggcc catagtcagc agcagctctg agccagatta  
900

aggaatgaa gaactgttgc ctaattggaa agtgccagca ttccagactt caaaaataaa  
960

aatctgaag aggcttctcc tgttttatat attatgtgaa gaatttagat cttatattgg  
1020

ttgcacaag ttccctggag aaaaaaattg ctctgtgtat atctcttgga aaataagaca  
1080

tagtatttc tcctttgcaa tagcagttat aacagatgtg aaaatatact tgactcta  
1140

tgattatac aaaagagcat ggatgcattt caaatgttag atattgctac tataatcaaa  
1200

gatttcata ttgatctttt tatcatgac ctacctatca agcactaaaa agttgaacca  
1260

tatacttta tatctgtaat gatactgatt atgaaatgtc ccctgaaact cattgcagca  
1320

ataactttt ttgagtcatt gacttcattt tatatttaaa aaattatgga atatcatctg  
1380

tattatatt ctaattaaaa ttgtgcataa tgctttggaa aaatgggtct tttataggaa  
1440

aaaactggg ataactgatt tctatggctt tcaaagctaa aatatataat atactaaacc  
1500

actctaata ttgcttcttg tgttttactg tcagattaaa ttacagcttt tatggatgat



eolf-seql-S000001.txt

1560

aaatttttag tacattttc  
1579

210> 35  
211> 4160  
212> DNA  
213> Homo sapiens

400> 35  
cgcttgccg aggattgcgt tgacgagact cttatttatt gtcaccaacc tgtggtggaa  
60

ttgcagttg cacattggat ctgattcgcc ccgccccgaa tgacgcctgc ccggaggcag  
120

gaaagtaca gccgcgccgc cccaagtcag cctggacaca taaatcagca cgcggccgga  
180

aaccccgca atctctgcgc ccacaaaata caccgacgat gcccgatcta cttaagggc  
240

gaaaccac gggcctgaga gactataaga gcgttccta ccgccatgga acaacgggga  
300

agaacgcc cggccgcttc gggggcccg aaaaggcacg gcccaggacc caggaggcg  
360

ggggagcca ggcctgggct ccgggtcccc aagacccttg tgctcgttgt cgccgcggtc  
420

tgctgttg tctcagctga gtctgctctg atcacccaac aagacctagc tcccagcag  
480

gagcgccc cacaacaaaa gaggtccagc ccctcagagg gattgtgtcc acctggacac  
540

atatctcag aagacggtag agattgcac tctgcaaat atggacagga ctatagcact  
600

actggaatg acctcctttt ctgcttgccg tgcaccaggt gtgattcagg tgaagtggag  
660

aaagtcct gcaccacgac cagaaacaca gtgtgtcagt gcgaagaagg caccttcgg  
720

agaagatt ctctgagat gtgccggaag tgccgcacag ggtgtcccag agggatggtc  
780

ggtcggtg attgtacacc ctggagtgc atcgaatgtg tccacaaaga atcaggtaca  
840

gcacagtg gggaagcccc agctgtggag gagacggtga cctccagccc agggactcct

eolf-seql-S000001.txt

900

cctctccct gttctctctc aggcattcatc ataggagtca cagttgcagc cgtagtcttg  
960

ttgtggctg tgtttggttg caagtcttta ctgtggaaga aagtccttcc ttacctgaaa  
1020

gcattctgct caggtgggtg tggggaccct gagcgtgtgg acagaagctc acaacgacct  
1080

gggctgagg acaatgtcct caatgagatc gtgagtatct tgcagcccac ccaggctcct  
1140

agcaggaaa tggaagtcca ggagccagca gagccaacag gtgtcaacat gttgtcccc  
1200

gggagtcag agcattctgct ggaaccggca gaagctgaaa ggtctcagag gaggaggctg  
1260

tggttccag caaatgaagg tgatccact gagactctga gacagtgttt cgatgacttt  
1320

cagacttgg tgccctttga ctctgggag ccgctcatga ggaagttggg cctcatggac  
1380

atgagataa aggtggctaa agctgaggca gcgggccaca gggacacctt gtacacgatg  
1440

cgataaagt gggtaacaaa aaccgggcga gatgcctctg tccacacctt gctggatgcc  
1500

gggagacgc tgggagagag acttgccaag cagaagattg aggaccactt gttgagctct  
1560

gaaagttca tgtatctaga aggtaatgca gactctgcca tgtcctaagt gtgattctct  
1620

caggaagtc agaccttccc tggtttacct tttttctgga aaaagcccaa ctggactcca  
1680

cagtagga aagtgccaca attgtcacat gaccggtact ggaagaaact ctcccatcca  
1740

cattaccca gtggatggaa catcctgtaa cttttcactg cacttggcat tatttttata  
1800

ctgaatgt gataataagg acactatgga aatgtctgga tcattccgtt tgtgcgtact  
1860

cgagatttg gtttgggatg tcattgtttt cacagcactt ttttatccta atgtaaatgc  
1920

tattttatt tatttgggct acattgtaag atccatctac acagtcgttg tccgacttca  
1980

## eolf-seql-S000001.txt

ttgatacta tatgatatga accttttttg ggtggggggt gcggggcagt tcactctgtc  
2040

cccaggctg gagtgcaatg gtgcaatctt ggctcactat agccttgacc tctcaggctc  
2100

agcgattct cccacctcag ccatccaaat agctgggacc acaggtgtgc accaccacgc  
2160

cggctaatt ttttgtattt tgtctagata taggggctct ctatgttget caggggtggtc  
2220

cgaattcct ggactcaagc agtctgccca cctcagactc ccaaagcggg ggaattagag  
2280

cgtgagccc ccatgcttgg ccttaccttt ctacttttat aattctgtat gttattattt  
2340

atgaacatg aagaaacttt agtaaata gta cttgtttaca tagttatgtg aatagattag  
2400

aaacataa aaggaggaga catacaatgg gggaagaaga agaagtcccc tgtaagatgt  
2460

actgtctgg gttccagccc tccctcagat gtactttggc ttcaatgatt ggcaacttct  
2520

caggggcca gtcttttgaa ctggacaacc ttacaagtat atgagtatta tttataggta  
2580

ctgtttaca tatgagtcgg gaccaaagag aactggatcc acgtgaagtc ctgtgtgtgg  
2640

cggtccta cctgggcagt ctcatctgca cccatagccc ccatctatgg acaggctggg  
2700

cagaggcag atgggttaga tcacacataa caatagggtc tatgtcatat cccaagtga  
2760

ctgagccct gtttgggctc aggagataga agacaaaatc tgtctccac gtctgccatg  
2820

catcaaggg ggaagagtag atgggtgctt agaatgggtg gaaatgggtt ccatctcagg  
2880

ctagatggc ccggctcact tctgggttatc tgtcaccctg agcccatgag ctgcctttta  
2940

ctgtacagat tgcctacttg aggaccttgg ccgctctgta agcatctgac tcatctcaga  
3000

ctgtcaatt cttaaact gtggcaacag gacctagaat ggctgacgca ttaagggttt  
3060

eolf-seql-S000001.txt

ttcttgtgt cctgttctat tattgtttta agacctcagt aaccatttca gcctctttcc  
3120

jcaaaccct tctccatagt atttcagtca tggaaggatc atttatgcag gtagtcattc  
3180

aggagtttt tgggtcttttc tgtctcaagg cattgtgtgt tttgttccgg gactggtttg  
3240

gtgggacaa agttagaatt gcctgaagat cacacattca gactgttgtg tctgtggagt  
3300

taggagtg gggggtgacc tttctggtct ttgcacttcc atcctctccc acttccatct  
3360

catcccac gcgttgtccc ctgcacttct ggaaggcaca ggggtgctgct gcctcctggt  
3420

ttgccttt gctgggcctt ctgtgcagga cgctcagcct cagggctcag aaggtgccag  
3480

cggtccca ggtcccttgt cccttccaca gaggccttcc tagaagatgc atctagagtg  
3540

agccttat cagtgtttta gatttgtctt ttatttttaa tttttttgag acagaatctc  
3600

ttctctgc ccaggctgga gtgcaacggt acgatcttgg ctcagtgcaa cctccgcctc  
3660

gggttcaa gcgattctcg tgctcagcc tccggagtag ctgggattgc aggcaccgcg  
3720

ccacgcct ggctaatttt tgtattttta gtagagacgg ggtttcacca tgttggtcag  
3780

tggtctcg aactcctgac ctgagtgat ccaccttggc ctccgaaagt gctgggatta  
3840

ggcgtgag ccaccagcca ggccaagcta ttcttttaaa gtaagcttcc tgacgacatg  
3900

ataattgg gggttttgtt gtttagttac attaggcttt gctatatccc caggccaaat  
3960

catgtgac acaggacagc catagtatag tgtgtcactc gtggttggtg tcctttcatg  
4020

tctgccct gtcaaaggtc cctatttgaa atgtgttata atacaaacaa ggaagcacat  
4080

tgtacaaa atacttatgt atttatgaat ccatgaccaa attaaatatg aaaccttata  
4140

aaaaaaaa aaaaaaaaaa

eolf-seql-S000001.txt

4160

```
210> 36
211> 666
212> DNA
213> Homo sapiens

400> 36
caggcttgg ctgcgccctc tcgcgccgca cgctctgcgg gttcctccct tcttccgagc
 60
tctcctctg gccgccgcgc gggagagagg ccgagatggc agatgagatt gccaaggctc
 120
ggtcgctcg gcctggtggc gacacgatct ttgggaagat catccgcaag gaaataccag
 180
caaaatcat ttttgaggat gaccggtgcc ttgctttcca tgacatttcc cctcaagcac
 240
aacacattt tctggtgata cccaagaaac atatatccca gatttctgtg gcagaagatg
 300
tgatgaaag tcttcttgga cacttaatga ttggttgcaa gaaatgtgct gctgatctgg
 360
cctgaataa gggttatcga atggtggtga atgaaggttc agatggtgga cagtctgtct
 420
tcacgttca tctccatggt cttggaggtc ggcaaatagca ttggcctcct ggttaagcac
 480
ttttgggga taattttctc ttcttttaggc aatgattaag ttaggcaatt tccagtatgt
 540
aagtaacac acttatTTTT gcctgtgtat ggagagattc aagaaataat tttaaaaccg
 600
atacataat aaaagacatt gttgcatggc ttgtaaaaaa aaaaaaaaaa aaaaaaaaaa
 660
aaaa
 666

210> 37
211> 3683
212> DNA
213> Homo sapiens

100> 37
ctggcaggc ggcggctgca gggcaggctc aggggccaca tggctgaggg ggacgcaggg
 60
```

eolf-seql-S000001.txt

gcgaccaga ggcagaatga ggaaattgaa gcaatggcag ccatttatgg cgaggagtgg  
120

gtgtcattg atgactgtgc caaaatattt tgtattagaa ttagcgacga tatagatgac  
180

cctaatgga cactttgctt gcagggtgatg ctgccgaatg aatacccagg tacagctcca  
240

ctatctacc agttgaatgc tccttggctt aaagggcaag aacgtgcgga tttatcaa  
300

gccttgagg aaatatatat tcagaatata ggtgaaagta ttctttacct gtgggtggag  
360

aaataagag atgttcttat acaaaaatct cagatgacag aaccaggccc agatgtaaag  
420

agaaaactg aagaggaaga tgttgaatgt gaagatgata tcatttttagc atgtcagccg  
480

aaagtccgg ttaaagcatt ggattttgat atcagtgaag ctcggacaga agtagaagta  
540

aagaattac ctccgattga tcatggcatt cctattacag accgaagaag tacttttcag  
600

cacacttgg ctccagtggg ttgtcccaaa cagggtgaaa tggttctttc caaattgtat  
660

agaataaga aaatagctag tgccaccac aacatctatg cctacagaat atattgtgag  
720

ataaacaga ccttcttaca ggattgtgag gatgatgggg aaacagcagc tgggtggcgt  
780

ttcttcata tcatggagat tttgaatgtg aagaatgtca tgggtgtagt atcacgctgg  
840

atggaggga ttctgctagg accagatcgc tttaaacata tcaacaactg tgccagaaac  
900

actagtgg aaaagaacta cacaattca cctgaggagt catctaaggc tttgggaaag  
960

caaaaaag taagaaaaga caagaagagg aatgaacatt aatacctgaa actataggaa  
1020

tgtaattt gcctataatt atatatacat tccatagtca tcaaggaata tattgtgcag  
1080

agagtatc cttgactgct taagtcagcc agttcagcat ggataccaac attagctttt  
1140

ttcttgggt atatcatctg ccaaaaatag agaacttatg atctattcat gtgtgtttca

eolf-seql-S000001.txt

1200

gcttatttg ggagaactaa tttgaactta atcaccactt catctaattt tagcaaggta  
1260

cagttgccc agggcagtac ctgaattaac tgtccatttc agtacatgtc aagtgccttt  
1320

ttaggtgga gaagaaatgt ctctagagga atataaatac ctgatttctt gtcacgcaga  
1380

tcttgact gttaaataa tattgccttt tactgctctt tatggcttat tggaatagga  
1440

ctcatttaa gattgatctt ggagagtttc ttcttgatgat tttagttcat aagtatgtca  
1500

cttcattt tatagtgttc atcattgagt aatggattaa gtgaaaatcc aggagtatcc  
1560

ctgcagtt atgtgctgag gtgataattc atccaacata tttgttagca taaatattat  
1620

cttcagtt ctgttgcaaa ttggtgattg tgaaattaca gaaagtgatt ttctagtctg  
1680

ctttttgt ttaattcttg taatgtaagc aataaatatg gagtgtcagt agtctccttc  
1740

acccagaa atgtgttggt gtaacattct cgtttctttt aacaacctgg aagtaccttt  
1800

ctgtgatct tctctgagga attagaacta tgatagaagt taggctgtgg caaatgggac  
1860

ctcgtagag tgggatagag gtggcagaat gaacctggtg tagggcagga gtatgttggtg  
1920

agttacatc aatttgatgc atgctttcca tctgcactcc agacggcttt ctcatgtcca  
1980

gattttgca gagagaagga gcaaacttt tcattggaaa aacagaaaca accctcccc  
2040

gatttttc cctctattc atcaaactt tatgtatctt tcatcttcca gttacctcta  
2100

gcatttaga tagtgaaatt tacctttgag atataacaat aagtgattaa ctgttcactt  
2160

agatgtaa tggcaaacaa ttgttaaaag ttattaactg atcacagatt tgccctggact  
2220

cccttcca gggagggaac agaagttagg aggcaacttt gggatggtgc tagagcatgg  
2280

## eolf-seql-S000001.txt

aagcacaga gaattggaca aacaggtctt tttctctttt ctctgatggt ttacctttaa  
2340

agatccaac atccttaccg ttggtathtt tagtaagggt atagtaaata gctttacacc  
2400

ggatggatt ctgaaatata aattctaaat tatatttggt ataactatat tttatgttgt  
2460

tgttatcag gagccatcag agaatgacct ttttgtgttt ggaacacttg gttccatgaa  
2520

agtatgctt tgtgttttaa ctgttaaaat aatttaaaaa ttaattatht tacataatta  
2580

agaagttaa aaactattaa cattaaataa tttcacaatt tcaacatgct aaacctatga  
2640

gggagatag gaaacaatga gaaacttact tttgctcctt tatacagaat tattaactat  
2700

ttttactaa ctaaaaaact ctagtattct ttacctaaag tcaattggct ggtaagaggg  
2760

jagatgcaa aattctccag ctctgaactt ggagctactt cacactctac tcttaatgga  
2820

acttgaact aatgatagat agtathtttt tcctctatht aaaathtttg tcttgattag  
2880

agathtttc agttctccat ataataatht tctacaatca gatctatgct gtggcatatht  
2940

tgcthtatt taaaaathtt tttttagaga tgagttcttg ctctgtcacc taggctggag  
3000

jcagtggca tgatcatggc tcaactgcagc cttgaccttc cagcctgcca agtagctggg  
3060

ctacagaca ggcatgtgct attacacctg gctaathttt aaagthtttt ttgtaaagat  
3120

jggctcttc tatgttgccc aggctcgtct tgagctcctg gcctcaatcg atcttcctgc  
3180

jaggthttg gaattacagg tgtgagccac catgcctggc ctgctttgac atathtttata  
3240

jgtgttaat taaaaatagt cttcatatgc cagaatataa gagcaagtgt tatctactht  
3300

jagatggga attgcagaag ctgcatcaaa agtatgctht gaggtatata tagtgaaaca  
3360



eolf-seql-S000001.txt

agcctttct gaagagaatt atatcaaact aattacaacc aagaaataat agtatgaagc  
3420

gatgctgtt tggaggacag gaaaatttat cgggaaaatt acataatccc tctgattcca  
3480

tatccagag atagccatta ttattaatat ttggtatgta catccttata ttattttttt  
3540

ttatgcatg attttgtata tatggttatt tttctttcca taaaaatggg attaaactgt  
3600

tatactgtt ttgtagccta catatttcat atagaagtat attgttaaca ttttccatgt  
3660

aataaatat tctatggctt tct  
3683

210> 38  
211> 3251  
212> DNA  
213> Homo sapiens

400> 38 /  
agcaactat gaaataatcg tagtatgaga ggcagagatc ggggcgagac aatggggatg  
60

gggcgcggg agccccgttc cggcttagca gcacctcca gccccgcaga ataaaaccga  
120

cgcgcccc tccgcgcgcg cctcccccg agtgcggagc gggaggaggc ggcggcggcc  
180

aggaggagg aggaggaggc cccggaggag gaggcgttgg aggtcgaggc ggaggcggag  
240

aggaggagg ccgaggcgcc ggaggaggcc gaggcgccgg agcaggagga ggccggccgg  
300

ggcggcatg agacgagcgt ggcggccgcg gctgctcggg gccgcgctgg ttgcccattg  
360

cagcggcgt ctgcagctcg cttcaagatg gccgcttggc tcgcattcat tttctgctga  
420

cgactttta actttcattg tcttttccgc ccgcttcgat cgctcgcgc cggtgctct  
480

ccgggatt ttttatcaag cagaaatgca tcgaacaacg agaatcaaga tcaactgagct  
540

atccccac ctgatgtgtg tgctttgtgg agggacttc attgatgcca caaccataat  
600

eolf-seql-S000001.txt

gaatgtcta cattccttct gtaaaacgtg tattgttcgt tacctggaga ccagcaagta  
660

tgtcctatt tgtgatgtcc aagttcacaa gaccagacca ctactgaata taaggtcaga  
720

aaaactctc caagatatgg tatacaaatt agttccaggg cttttcaaaa atgaaatgaa  
780

agaagaagg gatttttatg cagctcatcc ttctgctgat gctgccaatg gctctaata  
840

gatagagga gaggttgag atgaagataa gagaattata actgatgatg agataataag  
900

ttatccatt gaattctttg accagaacag attggatcgg aaagtaaaca aagacaaaga  
960

aaatctaag gaggaggtga atgataaaaag atacttacga tgcccagcag caatgactgt  
1020

atgcactta agaaagtttc tcagaagtaa aatggacata cctaatactt tccagattga  
1080

gtcatgtat gaggaggaac ctttaaagga ttattataca ctaatggata ttgcctacat  
1140

tatacctgg agaaggaatg gtccacttcc attgaaatac agagttcgac ctacttgtaa  
1200

agaatgaag atcagtcacc agagagatgg actgacaaat gctggagaac tggaaagtga  
1260

ctggggagt gacaaggcca acagcccagc aggaggtatt cctccacct cttcttgttt  
1320

ctagcccc agtactccag tgcagtctcc tcatccacag tttcctcaca tttccagtac  
1380

atgaatgga accagcaaca gcccagcgg taaccaccaa tcttcttttg ccaatagacc  
1440

agaaaatca tcagtaaattg ggtcatcagc aacttcttct ggttgatacc tgagactgtt  
1500

aggaaaaaa attttaaacc cctgatttat atagatatct tcatgccatt acagctttct  
1560

gatgctaata acatgtgact atcgtccaat ttgctttctt ttgtagtgac attaaatttg  
1620

atataaaag atggactaca tgtgatactc ctatggacgt taattgaaaa gaaagattgt  
1680

ttataaaag aattggtttc ttggaaagca ggcaagactt tttctctgtg ttaggaaaga

## eolf-seql-S000001.txt

1740

gggaaatgg tttctgtaac cattgtttgg atttggaagt actctgcagt ggacataagc  
1800

ttggggccat agtttggttaa tctcaactaa cgcctacatt acattctcct tgatcgttct  
1860

gttattacg ctgttttgtg aacctgtaga aaacaagtgc tttttatctt gaaattcaac  
1920

aacggaaaag aatatgcata gaataatgca ttctatgtag ccatgtcact gtgaataacg  
1980

tttcttgca tatttagcca ttttgattcc tgtttgattt atacttctct gttgctacgc  
2040

aaaccgatc aaagaaaagt gaacttcagt ttacaatct gtatgcctaa aagcgggtac  
2100

accgtttat tttactgact tgtttaaatg attcgctttt gtaagaatca gatggcatta  
2160

gcttgttgt acaatgccat attggtatat gacataacag gaaacagtat tgtatgatat  
2220

tttataaat gctataaaga aatattgtgt ttcatgcatt cagaaatgat tgttaaaatt  
2280

cccaactg gttcgacctt tgcagatacc cataacctat gttgagcctt gcttaccagc  
2340

agaatatt tttaatgtgg atatctaatt ctaaagtctg ttccattaga agcaattggc  
2400

atctttct atactttata tacttttctc cagtaataca tgtttacttt aaaaattggt  
2460

agtggaaga aaaaccttta actgagaaat atggaaaccg tcttaatttt ccattggcta  
2520

atggaatt aatattgtat tttaaaaatg catattgatc actataattc taaaacaatt  
2580

tttaataa accagcaggt tgctaaaaga aggcatttta tctaaagtta tttaaatagg  
2640

gtatagca gtaattttaa atttaagagt tgcttttaca gttaacaatg gaatatgcct  
2700

cttgctat gtctgaaaat agaagctatt tattatgagc ttctacaggt atttttaaat  
2760

agcaagca tgttgaattt aaaatatgaa taaccccacc caacaatttt cagtttattt  
2820

## eolf-seql-S000001.txt

ttgctttgg tcgaacttgg tgtgtgttca tcacccatca gttatttgtg aggggtgttta  
2880

tctatatga atattgtttc atgtttgtat gggaaaattg tagctaaaca tttcattgtc  
2940

ccagtctgc aaaagaagca caattctatt gctttgtctt gcttatagtc attaaatcat  
3000

acttttaca tatattgctg ttacttctgc tttctttaaa aatatagtaa aggatgtttt  
3060

tgaagtcac aagatacata tattttttatt ttgacctaaa tttgtacagt cccattgtaa  
3120

tgttgtttc taattataga tgtaaaatga aatttcattt gtaattggaa aaaatccaat  
3180

aaaaggata ttcattttaga aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa  
3240

aaaaaaaaa a  
3251

210> 39  
211> 2855  
212> DNA  
213> Homo sapiens

400> 39  
agtggcagt tatatagacc ggcggcggag cacgcgtgtg tgcggacgca gttgcgtgag  
60

tggtttgtac tatcctcggg gctgtggtgc agagctagtt cctctccagc tcagccgcgt  
120

tggtttggac atatttgact cttttccccc caggttgaat tgaccaaaagc aatgggtgatg  
180

tgaagccta gtcccctgct ggtcggggcg gaatttgtga gacagtatta cacactgctg  
240

tccaggccc cagacatgct gcatagattt tatggaaaga actcttctta tgtccatggg  
300

tattggatt caaatggaaa gccagcagat gcagtctacg gacagaaaga aatccacagg  
360

tagtgatgt cacaaaactt caccaactgc cacaccaaga ttcgccatgt tgatgctcat  
420

tcacgctaa atgatgggtg ggtagtccag gtgatggggc ttctctctaa caacaaccag  
480

## eolf-seql-S000001.txt

ctttgagga gattcatgca aacgtttgtc cttgctcctg aggggtctgt tgcaaataaa  
540

tctatgttc acaatgatat cttcagatac caagatgagg tctttggtgg gtttgtcact  
600

agcctcagg aggagtctga agaagaagta gaggaacctg aagaaagaca gcaaacacct  
660

aggtggtac ctgatgattc tggaactttc tatgatcagg cagttgtcag taatgacatg  
720

agaacatt tagaggagcc tgttgctgaa ccagagcctg atcctgaacc agaaccagaa  
780

agaacctg tatctgaaat ccaagaggaa aagcctgagc cagtattaga agaaactgcc  
840

tgaggatg ctcagaagag ttcttctcca gcacctgcag acatagctca gacagtacag  
900

agacttga ggacattttc ttgggcatct gtgaccagta agaatcttcc acccagtgga  
960

tgttccag ttactgggat accacctcat gttgttaaag taccagcttc acagccccgt  
1020

agagtcta agcctgaatc tcagattcca ccacaaagac ctcagcggga tcaaagagtg  
1080

jagaacaac gaataaatat tcctccccaag aggggaccca gaccaatccg tgaggctggt  
1140

igcaaggtg acattgaacc ccgaagaatg gtgagacacc ctgacagtca ccaactcttc  
1200

tggaacc tgcctcatga agtggacaaa tcagagctta aagatttctt tcaaagttat  
1260

aaacgtgg tggagttgag cattaacagt ggtgggaaat taccgaattt tggttttgtt  
1320

gtttgatg attctgagcc tgttcagaaa gtccttagca acaggcccat catgttcaga  
1380

tgaggtcc gtctgaatgt cgaagagaag aagactcgag ctgccaggga aggcgaccga  
1440

agataatc gccttcgggg acctggaggc cctcgagggt ggctgggtgg tggaatgaga  
1500

ccctcccc gtggaggcat ggtgcagaaa ccaggatttg gagtgggaag ggggcttgag  
1560

eolf-seql-S000001.txt

cacggcagt gaatcttcat ggatcttcat gcagccatac aaaccctggg tccaacagaa  
1620

ggatgaattt tcgacagcct ttggatatct ggagtatgac cccagtctgt tataaactgc  
1680

taagtttgt ataattttac tttttttgtg tggttaatgg gtgtgctccc tctccctctc  
1740

tccctttcc tgacctttag tctttcactt ccaattttgt ggaatgatat ttaggaata  
1800

cggactttt aaagaagcaa aaaaaagac tgaatttcct tgcttacttt gcatatacag  
1860

ctggatttt tttttttttt ttacagccat ttccccaag gaatgtcttg catattactg  
1920

catttggtg tgtttcattc attggaatat ttcttatttt ctacgtgttt gaaaagcctg  
1980

aagaaatac aggatttgat aatattttga aggcaggaaa aacccaaatt gtttcttctt  
2040

gagagtcac gactaccttc tgggtgtggag aaattgccat tggaaaattt gacaattttg  
2100

ttctcactg gtatgtttta aaactgaata aaaggaatag aatttttttt tgataaagga  
2160

acaaaaaca attctaaaac ctaactgttt ttaccattga aatttaaatt gtgataatag  
2220

ttttaaatg tctagaatgc aactgatagg cttttcttga actgttagtt tttttgaagt  
2280

gttttttca tgtttaattt gtatttgtaa aaaaacaaaa agcaaaaaaa ttcccaaac  
2340

agataaca accagagcaa aactgttgtg ctttctattt atctttgatt tcagtcttgg  
2400

aattgttta aaaaaaaaaat ctagatttgt ttatttaggt tcagagtatg tggggaatta  
2460

agaatccct ctttcatcac ttgtgtatg tcttttgta acatatttgt tatgccttat  
2520

ataaaattg agtctcaaac tggaatgcct ttgaagacag atgcttctat agaggttctt  
2580

acctaata agttcagcat ttgtattttt attctgggtat ctaatcagat tcctaatacat  
2640

jcccgtaag aaggaatgtt actttaatat tggactttgc tcatgtgctc gtgtccgcac

eolf-seql-S000001.txt

2700

ttttttttt cttaaaatca tagccatatg gtaaattttc tattttgtta tggttctctt  
2760

tattgatgg gcatgcagtg ggtgttactt ggaaatggcc aatttttatt aaaatatttc  
2820

ggaagaaaa tttaaaaaaa aaaaaaaaaa aaaaa  
2855

210&gt; 40

211&gt; 1396

212&gt; DNA

213&gt; Homo sapiens

400&gt; 40

cgtaattaa aaggcggcgg aagaaggtgg gagggtcatg acgcagcag tttcagtcgt  
60

acttttctg ggggcatcgc ggcgtcccct tttttttgcc tttaaagtaa aacgtcgccc  
120

gacgcaccc cccgcgtatt tcggggggcg gaggcggcgg gccacggcgc gaagagggggc  
180

gtgctgacg ccggccggtc acgtgggcgt gttgtggggg ggaggggcgc cgccgcgcgg  
240

cggttccgg gcggttggga gcgcgcgagc tagcgagcga gaggcagccg cgcccgccgc  
300

jccctgct ctgtatgccg ctctctcccg gcgcggccgc cgccgatcac agcagcagga  
360

ccaccgccg ccgcggttga tgtggttggg ccggggctga ggaggccgcc aagatgccgc  
420

gtccaagtc ccggaagatc gcgatcctgg gctaccggtc tgtggggaaa tcctcattga  
480

jattcaatt tgttgaaggc caatttgtgg actcctacga tccaaccata gaaaacactt  
540

cacaaagtt gatcacagta aatggacaag aatatcatct tcaacttgta gacacagccg  
600

jcaagatga atattctatc tttcctcaga catactccat agatattaat ggctatattc  
660

igtgtattc tgttacatca atcaaaagtt ttgaagtgat taaagttatc catggcaa  
720

jttggatat ggtggggaaa gtacaaatac ctattatgtt ggttgggaat aagaaagacc

eolf-seql-S000001.txt

780

gcatatgga aagggatgatc agttatgaag aagggaaagc tttggcagaa tcttggaatg  
840

agctttttt ggaatcttct gctaaagaaa atcagactgc tgtggatggt tttcgaagga  
900

aattttgga ggcagaaaaa atggacgggg cagcttcaca aggcaagtct tcatgctcgg  
960

gatgtgatt ctgctgcaaa gcctgaggac actgggaata tattctacct gaagaagcaa  
1020

ctgcccggtt ctccttgaag ataaactatg cttctttttt cttctgttaa cctgaaagat  
1080

tcatttggg tcagagctcc cctcccttca gattatgtta actctgagtc tgtccaaatg  
1140

gttcacttc cattttcaaa ttttaagcaa tcatattttc aatttatata ttgtatttct  
1200

aatattatg accaagaatt ttatcggcac taatttttca gtgtagtttg ttgtttaaaa  
1260

aatgtaatc atcaaaatga tgcataattgt tacactacta ttaactaggc ttcagtatat  
1320

agtgtttat ttcattgtgt taaatgtata cttgtaaata aaatagctgc aaacctcaaa  
1380

aaaaaaaa aaaaaa  
1396

?10> 41

?11> 2589

?12> DNA

?13> Homo sapiens

!00> 41

!accagga gatctctcca tttctctctt gtctacagtg cggctacaaa tctgggattt  
60

!ttattact tctttttttt tcgaactaca cttgggctcc tttttttgtg ctcgactttt  
120

!accctttt tccctccctc ctgtgctgct gctttttgat ctcttcgact aaaatttttt  
180

!tccggagt gtatttaatc ggttctgttc tgtcctctcc accaccccca cccccctccc  
240

!cgggtgtgt gtgccgctgc cgctgttgcc gccgccgctg ctgctgctgc tcgccccgtc



eolf-seql-S000001.txt

300

ttacaccaa cccgaggctc ttgttttccc ctcttggate tgttgagttt ctttgttgaa  
360

aagccagca tgggtgccca gttctccaag accgcagcga agggagaagc cgccgcggag  
420

ggcctgggg aggcggctgt ggcctcgctg ctttccaaag cgaacggaca ggagaatggc  
480

tcgtgaagg taaacggcga cgcttcgccc gcggccgccg agtcggggcg caaggaggag  
540

tcaggcca acggcagcgc cccggccgcc gacaaggagg agcccgcggc cgccgggagc  
600

ggcggcgt cgccctctc ggccgagaaa ggtgagccgg ccgcccgcgc tgccccgag  
660

tcggggcca gcccggtaga gaaggaggcc cccgcggaag gcgaggctgc cgagcccggc  
720

ggccacgg ccgcgagggg agaggccgcg tcggccgcct cctcgacttc ttcgcccag  
780

tcaggacg gggccacgcc ctgcccagc aacgagacc cgaaaaaaaa aaagaagcgc  
840

ttccttca agaagtcttt caagctgagc ggcttctcct tcaagaagaa caagaaggag  
900

tgagagaag gcggtgaggc tgaggcgccc gctgccgaag gcggcaagga cgaggccgcc  
960

gggcgag ctgcgccgc cgccgaggcg ggcgcggcct ccggggagca ggcagcggcg  
1020

gggcgagg aggcggcagc gggcgaggag ggggcggcg gtggcgacc gcaggaggcc  
1080

gccccagg aggcgctgt cgcgccagag aagccgccc ccagcgacga gaccaaggcc  
1140

tcaggagc ccagcaaggt ggaggagaaa aaggccgagg aggcggggc cagcgccgcc  
1200

ctgcgagg cccctccgc cgccgggccc ggcgcgccc cgagcgagga ggcagcccc  
1260

ggaggagc ccgcggccgc cgcagcctcg tcagcctgcg cagccccctc acaggaggcc  
1320

gcccaggt gcagtccaga agcccccca gcggaggcgg cagagtaaaa gagcaagctt  
1380

## eolf-seql-S000001.txt

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1440

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1500

tttttttaa gcaccaaatt ttgttgtttt tttttttctc ccctccccac agatcccatc  
1560

aaatcatt ctgttaacca ccattccaac aggtcgagga gagcttaaac accttcttcc  
1620

tgcccttg ttctctttta ttttttattt tttcgcatca gtattaatgt ttttgcatac  
1680

tgcatctt tattcaaaag tgtaaacttt ctttgtcaat ctatggacat gcccatatat  
1740

aggagatg ggtgggtcaa aaagggatat caaatgaagt gataggggtc acaatgggga  
1800

ttgaagtg gtgcataaca ttgccaaaat agtgtgccac tagaaatggg gtaaaggctg  
1860

tttttttt tttttttaaa gaaaagttat taccatgtat tttgtgaggc aggtttacaa  
1920

ctacaagt cttgagttaa gaaggaaaga ggaaaaaaga aaaaacacca ataccagat  
1980

aaaaaaaa aaaaacgac atagtcttag gagttcattt aaaccatagg aacttttcac  
2040

atctcatg ttagctgtac cagtcagtga ttaagtagaa ctacaagttg tataggcttt  
2100

tgttttatt gctggtttat gaccttaata aagtgttaatt atgtattacc agcaggggtg  
2160

ttaactgt gactattgta taaaaacaaa tcttgatata cagaagcaca tgaagtttgc  
2220

ctttccac cctgcccatt tttgtaaaac tgcagtcata ttggaccttt taaaacacaa  
2280

tttaaact caaccaagct gtgataagtg gaatggttac tgtttatact gtggtatgtt  
2340

tgattaca gcagataatg ctttcttttc cagtcgtctt tgagaataaa ggaaaaaaaa  
2400

ttcagatg caatggtttt gtgtagcata ttgtctatca tgttttgtaa atactggaga  
2460

eolf-seql-S000001.txt

gctttgacc aatttgactt agagatggaa tgtaactttg cttacaaaaa ttgctattaa  
2520

ctcctgctt aaggtgttct aattttctgt gagcacacta aaagcgaaaa ataatgtga  
2580

taaaatgt  
2589

210> 42  
211> 1466  
212> DNA  
213> Homo sapiens

400> 42  
jggctgctg ggactcgctg tcggttggcg actcccggac gttaggtagt ttgttgggccc  
60

jgttctgag gccttgcttc tctttacttt tccactctag gccacgatgc cgcagtacca  
120

acctgggag gagttcagcc gcgctgccga gaagctttac ctgctgacc ctatgaaggc  
180

jgtgtggtt ctcaaataata ggcattctga tgggaacttg tgtgttaaag taacagatga  
240

ctagtttgt ttggtgtata aaacagacca agctcaagat gtaaagaaga ttgagaaatt  
300

acagtcaa ctaatgagac ttatggtagc caaggaagcc cgcaatgtta ccatggaaac  
360

jagtgaatg gtttgaaatg aagactttgt cgtgtactta ggaagtaaata atcttttgaa  
420

agagaaag gttgggacag aaagtacttt atgtaactaa gtgggctgtt cagaagctta  
480

aggtcattt tttgtaattt tctttttaat tacttttagag agctagggat gcaaatgttt  
540

agtttagaa agcctttatt tacttttgga aattgaacaa gaaatgcata tgtcttagaa  
600

ctggagatt atttgatgtt aggtaaaaca tgtaattgtt tctctggcaa atttgatatca  
660

caatttgaa aatgagatat taggaaaaac caattcttct taaatttagt tcatctttct  
720

aaaagaac attaaatgta accattttgt cagatccatg tattttggag cataaaatgt  
780

eolf-seql-S000001.txt

tgctgttgt gaccaataaa tataaaatat ggtaattgga attaactcca caccatagta  
840

gcattgtta tacatactgt gtacctaatt atgtatagca gtgtagtctc aattatatct  
900

aaagtaatt gtgactaaca agtatgcttt gccttatttc cacatttaaa ctacctgtta  
960

tataaggga tttgtagtat cagcttggtg agcaatgact ttgaatctag ttttcagtga  
1020

cagaagcag cagttatttg agtgtatgaa tggaatgatg atcactgtgc tataatgtac  
1080

gaaaccacc atattacaga aatatttact acatatatttc catctgtagt ttctcagaag  
1140

gctatggat tagtttgaac tgtcaaattc ttgcatactt ctgtgacacc cctgcccatt  
1200

tctgtcttt aattaaccaa ggtgttaggt gtgactgtca caactgttat gttttccagt  
1260

aactagaag cacgatattt gataattata tttgtatttc accacctaaa tgtaatggtg  
1320

tcctcaag aatgaaatga aggactaca ttgaaatatg ttttgtataa atttgtcatg  
1380

gaacagca ttttagcatg gtaagttccc ttagctatat gaattttggc atgtttcaga  
1440

agatcagta aataaaatat tagata  
1466

?10> 43

?11> 1815

?12> DNA

?13> Homo sapiens

!00> 43

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120

cgggctgg ccaagcagcc gtctttccgc cagtactccg gctacctcaa aagctccggc  
180

caagcacc tccactactg gtttgtggag tcccagaagg atcccagagaa cagccctgtg  
240

eolf-seql-S000001.txt

tgctttggc tcaatggggg tcccggctgc agctcactag atgggctcct cacagagcat  
300

gccccttcc tgggtccagcc agatgggtgc accctggagt acaacccta ttcttggaat  
360

tgattgcca atgtgttata cctggagtcc ccagctgggg tgggcttctc ctactccgat  
420

acaagtttt atgcaactaa tgacactgag gtcgcccaga gcaattttga ggccttcaa  
480

atttcttcc gcctctttcc ggagtacaag aacaacaaac ttttctgac cggggagagc  
540

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600

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660

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720

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780

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cccgtgtg ctggaggggt gccagccat tttaggtatg agaaggacac tgttggtgctc  
900

aggatttg gcaacatctt cactcgcttg ccactcaagc ggatgtggca tcaggcactg  
960

gcgctcag gggataaagt gcgcatggac cccccctgca ccaacacaa acgtgcttcc  
1020

ctacctca acaaccgta cgtgcggaag gccctcaaca tcccgagca gctgccacaa  
1080

gggacatgt gcaactttct ggtaaactta cagtaccgcc gtctctaccg aagcatgaac  
1140

ccagtatc tgaagctgct tagctcacag aaataccaga tctattata taatggagat  
1200

agacatgg cctgcaattt catgggggat gagtggtttg tggattccct caaccagaag  
1260

ggaggtgc agcgccggcc ctggttagtg aagtacgggg acagcgggga gcagattgcc  
1320

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eolf-seql-S000001.txt

1380

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1440

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1500

gctaggaga gtcctcttct aagcaaagtg cccctgcagg cgggttctgc cgccaggact  
1560

ccccttcc cagagccctg tacatcccag actgggccca gggctctcca tagacagcct  
1620

ggggcaagt tagcacttta ttcccgcagc agttcctgaa tgggggtggcc tggccccttc  
1680

ctgcttaaa gaatgccctt tatgatgcac tgattccatc ccaggaacct aacagagctc  
1740

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1800

ctgggtaca gcttc  
1815

210&gt; 44

211&gt; 3315

212&gt; DNA

213&gt; Homo sapiens

100&gt; 44

ttctcgcg ggacaccgac ggggagcgga agccaggagg tattgctgct tcggcgaccg  
60

cgggcgga gcggcggcgg cggctgtggc agagtctgtg cctgtggcgg tgacggcggc  
120

gagcaagc gctgccctcg cagagcagcc ttggggctcg cggccgctcg cagcgttgtg  
180

ggggcggg ccggacgctg agcggagcag ctgcgccacg ggtggcattg tgtgtcccag  
240

tgccggag cgagtcccag aagagaggcg aggctaagcc cagagcgtg gggtgcttca  
300

agggaaga ctcccttccc cctgcttcag gctgctgagc actgagcagc gctcagaatg  
360

agccatcg ccaaataatga cttcaaagct actgcagacg acgagctgag cttcaaaagg  
420

ggacatcc tcaaggtttt gaacgaagaa tgtgatcaga actggtacaa ggcagagctt

eolf-seql-S000001.txt

480

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600

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660

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720

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780

jaaaccagc agatattcct gcgggacata gaacagggtgc cacagcagcc gacatacgtc  
840

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900

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960

cgggcatgt ttccccgcaa ttatgtcacc cccgtgaacc ggaacgtcta agagtcaaga  
1020

jcaattatt taaagaaagt gaaaaatgta aaacacatac aaaagaatta aaccacaag  
1080

gcctctga cagcagcctg tgagggagtg cagaacacct ggccgggtca ccctgtgacc  
1140

ctcacttt gggttgaact ttaggggggtg ggagggggcg ttggatttaa aaatgccaaa  
1200

ttacctat aaattaagaa gagtttttat tacaaatttt cactgctgct cctctttccc  
1260

ccctttgtc ttttttttca tccttttttc tcttctgtcc atcagtgcac gacgtttaag  
1320

cacgtata gtccatagctg acgccaataa taaaaaaca gaaaccaagt gggctggtat  
1380

ctctctatg caaaatgtct gttttagttg gaatgactga aagaagaaca gctgttcctg  
1440

ttcttcgt atatacacac aaaaaggagc gggcagggcc gctcgatgcc ttgctgttt  
1500

cttcctcc agaggagggg acttgtagga atctgccttc cagcccagac cccagtgta  
1560

## eolf-seql-S000001.txt

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1620

ctgagaaa gcccacctgg gctgggcgcg gtggctcacg cctgtaatcc cagcactttg  
1680

jaggccaag gtgggcggat cacaaggta ggagttcgag accaacctag ccaacatggt  
1740

aaaccccg ctctactaaa aataagaaat tagccgggtg tggcacgcac ctgtagtccc  
1800

gtacttgg gagcctgagg caggagaatc gcttgaacct ggaagtga ggttgagtga  
1860

cgggaccg tgccattgta ctccagcctg ggtgacagag cgagattccg tctcaaaaaa  
1920

aaaaaaaa agccacactg aaagcctgtc tctttccact ttgttgccc ttccagtggg  
1980

ttatcgagc atgttgTTTT ttcatagtgc ctttttccct atttcaaggg ttgcttctga  
2040

gggtgtttt tttttttttt ttaatttggt ttgttttaaa ataagttaa ggcagtccag  
2100

gttttcag ccaatttggt tctactctg tgtaaattt tttccctccg ggcaggggag  
2160

agggtaga gcaaaggaga caaagcagga gtggaagggt aggcgttctc ctgcttgtag  
2220

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2280

tgcttgcc caggggtgcag tgtgagtgtg atgggccacc ggggcaagag ggaaggtag  
2340

jccagctc tcccacatcc cactggatct ggcttacagg ggggtcgga gcctgtcctc  
2400

cgctctcg gggttgtggc ccccgcccc tccctatatg caccctgga accagcaagt  
2460

cagacaag gagagcggag gaggaagtca tgggaacgca gcctccagtt gtagcagggt  
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2580

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2640



eolf-seql-S000001.txt

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2700

ccccacccc taccgatggc cccaggaagc agggagagtt ggggaaggca agattggaaa  
2760

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2820

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2880

cctccctct ctccgggag ctggtgacag ccttgggcct ttcagtccca aagcggccga  
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3000

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3120

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3240

cgcgatag catttggtag gtagtgatta actgtgaata ataaatacac aatgaattct  
3300

aaaaaaaaa aaaaa  
3315

?10> 45

?11> 2225

?12> DNA

?13> Homo sapiens

100> 45

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60

gggcgccg gcgctggcgg ccgtgccggg aggaaaacca attctgtgtc ctcgaggagc  
120

acagcccag ttgggccccca ggcgaaaccc agcctggagc ttgcaggcag gacgactgtt  
180

gcacgcag accgcccagg acaaggagga acccctgcac tcgattatca gcagcacaga  
240

eolf-seql-S000001.txt

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360

gccagcgat gccttgga aaactgcgtca caaactgggtg tctgacggcc aagcactgcc  
420

gaaatggag attcacttgc agaccaatgc cgagaaaggc accatcacca tccaggatac  
480

ggtatcggg atgacacagg aagagctggg gtccaacctg gggacgattg ccagatcggg  
540

tcaaaggcc ttctgggatg ctctgcagaa ccaggctgag gccagcagca agatcatcgg  
600

cagtttggg gtgggtttct actcagcttt catggtggct gacagagtgg aggtctattc  
660

cgctcggca gccccgggga gcctgggtta ccagtggctt tcagatgggt ctggagtgtt  
720

jaaatcgcc gaagcttcgg gagttagaac cgggacaaaa atcatcatcc acctgaaatc  
780

jactgcaag gagttttcca gcgaggcccg ggtgcgagat gtggtaacga agtacagcaa  
840

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900

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960

agggtcac gacaagcccc gctacacct gcaactataag acggacgcac cgctcaacat  
1020

gcagcatc ttctacgtgc ccgacatgaa accgtccatg tttgatgtga gccgggagct  
1080

ggtccagc gttgcactgt acagccgcaa agtccctatc cagaccaagg ccacggacat  
1140

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1200

tcagccgg gagctgctgc aggagagcgc actcatcagg aaactccggg acgttttaca  
1260

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eolf-seql-S000001.txt

1380

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1500

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1620

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1680

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1740

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1800

ccctccga ctggacaccc accctgccat ggtcaccgtg ctggagatgg gggctgccc  
1860

acttcctg cgcattgcagc agctggccaa gaccaggag gagcgcgac agctcctgca  
1920

ccacgctg gagatcaacc ccaggcacgc gctcatcaag aagctgaatc agctgcgcg  
1980

gcgagcct ggcctggctc agctgctggt ggatcagata tacgagaacg ccatgattgc  
2040

ctggactt gttgacgacc ctagggccat ggtggggccg ttgaatgagc tgcttgtaa  
2100

ccctggag cgacactgac agccaggggg ccagaaggac tgacaccaca gatgacagcc  
2160

acctcctt gagctttatt tacctaaatt taaaggtatt tcttaaccg aaaaaaaaaa  
2220

aaa  
2225

10> 46  
11> 1501  
12> DNA  
13> Homo sapiens

00> 46  
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eolf-seql-S000001.txt

60

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120

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180

tgcttgag aagaagttgc ccagtatgat ggggcataca aggttagtcg agggctgtgg  
240

agaaatatg gagacaagag gattattgac actcccatat cagagatggg ctttgctgga  
300

tgctgtag gtgcagctat ggctgggttg cggccattt gtgaatttat gaccttcaat  
360

ctccatgc aagccattga ccagggtata aactcagctg ccaagaccta ctacatgtct  
420

tggtccttc agcctgtgcc tatagtcttc aggggaccca atggtgcctc agcaggtgta  
480

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540

tcagtcctt ggaattcaga ggatgctaaa ggacttatta aatcagccat tcgggataac  
600

atccagtgg tgggtgctaga gaatgaattg atgtatgggg ttccttttga atttctcccg  
660

agctcagt caaaagattt tctgattcct attggaaaag ccaaataaga aaggcaagga  
720

acatataa ctgtggtttc ccattcaaga cctgtgggcc actgcttaga agctgcagca  
780

tgctatcta aagaaggagt tgaatgtgag gtgataaata tgcgtaccat tagaccaatg  
840

tcatggaaa ccatagaagc cagtgtcatg aagacaaatc atcttgtaac tgtggaagga  
900

tctggccac agtttgaggt aggagctgaa atctgtgccg ggatcatgga aggtcctgcg  
960

caatttcc tggatgctcc tgctgttcgt gtcactgggtg ctgatgtccc tatgccttat  
1020

aaagattc tagaggacaa ctctatacct cagggtcaaag acatcatatt tgcaataaag  
1080

aacattaa atatttagtt tggacttgaa tatcaagtcg ttgaaattta tttgaaatac  
1140

## eolf-seql-S000001.txt

igctggcac tgcacctgga tttgtactgc aagacctgac tattcataaa ggaaaacgat  
1200

ctaaagca acagcaggta tttttgtaca gggaagtta aatgtgttg tgtatggaaa  
1260

ctctccact ctctccct agatgccatg cttcctttg tctgttacgg ttgccatgtt  
1320

ttgaataa caaattatat cacattttat cctctctcac cacaaggaca aagtatggat  
1380

ggcagagt cctgatgaaa gatgtatcca aacaagataa cttatatgta taaaattaaa  
1440

atataata cacatttact gttagtttgt tttgataagg aataaaggaa tttctaacat  
1500

1501

!10> 47

!11> 699

!12> DNA

!13> Homo sapiens

!00> 47

ttccggtgt ggtcgacggg tctccaaga gtttggggcg cggaccggag taccttgcgt  
60

agttatgt cggcgtcggg agtgtctgtc atttcgcggg tcttagaaga gtacttgagc  
120

cactccgc agcgtctgaa gttgctggac gcgtacctgc tgtatatact gctgaccggg  
180

gctgcagt tcggttactg tctcctcgtg gggaccttcc cttcaactc tttctctcg  
240

cttcatct cttgtgtggg gagtttcatc ctagcggttt gcctgagaat acagatcaac  
300

acagaaca aagcggattt ccaaggcatc tcccagagc gagcctttgc tgattttctc  
360

tgccagca ccacctgca ccttgttgtc atgaactttg ttggctgaat cattctcatt  
420

cttaattg aggagtagga gactaaaaga atgttcactc tttgaatttc ctggataaga  
480

tctggaga tggcagctta ttggacacat ggattttctt cagatttgac acttactgct  
540

eolf-seql-S000001.txt

gctctgctt tttatgacag gagaaaagcc cagagttcac tgtgtgtcag aacaactttc  
600

aacaacat ttattaatcc agcctctgcc tttcattaaa tgtaaccttt tgctttccaa  
660

ttaaagaac tccatgccac tcctcaaaaa aaaaaaaaaa  
699

210> 48  
211> 829  
212> DNA  
213> Homo sapiens

400> 48  
jgggagtga aagcgaaagc ccgggcgact agccgggaga ccagagatct agcgactgaa  
60

cagcatggc caagccgtgt ggggtgcgcc tgagcgggga agcccgcaaa cagggtggagg  
120

tttcagaca gaatcttttc caggaggctg aggaattcct ctacagattc ttgccacaga  
180

aatcatata cctgaatcag ctcttgcaag aggactccct caatgtggct gacttgactt  
240

ctccgggc cccactggac atcccatcc cagaccctcc acccaaggat gatgagatgg  
300

acagataa gcaggagaag aaagaagtcc ataagtgtgg atttctccct gggaatgaga  
360

agtccgtgc cctgcttgcc ctggttaagc cagaagtctg gactctcaaa gagaaatgca  
420

ctggtgat tacatggatc caacacctga tccccaaagat tgaagatgga aatgattttg  
480

gtagcaat ccaggagaag gtgctggaga gggatgaatgc cgtcaagacc aaagtggaa  
540

ttccagac aaccatttcc aagtacttct cagaacgtgg ggatgctgtg gccaaaggcct  
600

aaggagac tcatgtaatg gattaccggg ccttggtgca tgagcgagat gaggcagcct  
660

ggggagct cagggccatg gtgctggacc tgagggcctt ctatgctgag ctttatcata  
720

atcagcag caacctggag aaaattgtca acccaaaggg tgaagaaaag ccattctatgt  
780

## eolf-seql-S000001.txt

gtgaacccg ggactagaag gaaaataaat gatctatatg ttgtgtgga  
829

210> 49

211> 965

212> DNA

213> Homo sapiens

100> 49

tgcttgcc tctatgactt acccagaagg caacgcttct ctttctgggc aaaatggctg  
60

aaagcaggc cgtttcagca tcaggcaagt ggctggatgg tattcgaaaa tggattaca  
120

gctgcagg attcaataaa ctgggggttaa tgcgagatga tacaatatac gaggatgaag  
180

gtaaaaga agccataaga agacttcctg agaaccttta taatgacagg atgtttcgca  
240

aaagagggc actggacctg aacttgaagc atcagatctt gcctaaagag cagtggacca  
300

tatgaaga ggaaaatttc taccttgaac cgtatctgaa agagggttatt cgggaaagaa  
360

gaaagaga agaatgggca aagaagtaat catgtagttg aagtctgtgg atgcagctgt  
420

tgaagatg gttaaacttg aaacaaacaa ttttaagaat tatttggtct gaagatgttt  
480

ctttaaat aaatgtctat tgtaatggct ggagtttttg aattccaaac cttatactga  
540

aactactg aatcccttta ctgttaaatt tttttccaaa ctttcaagat atatttagtt  
600

gtttaact gctacttgga gctcagaagc cactttatca gttttcctca ctggttggat  
660

cctatcag tttatggaag gatataactt ccgtaagtta catccttatg gaagctactg  
720

taaaagaa ggggggtatgc accccctagt ttgccaagat tgagaaatag cctcttcact  
780

tatgcaaa cagatttgat tttgcatcct atcatttaaa aagaaattat gtctgcaccc  
840

acataggc atacttaagt aatatacata ctctgtgct aacatgtata ctagaaaaca  
900

## eolf-seql-S000001.txt

aaagatggt agaaaaataa aagtataaag acaaatcaaa aaaaaaaaaa aaaaaaaaaa  
960

aaaa  
965

210> 50  
211> 653  
212> DNA  
213> Homo sapiens

100> 50  
ggacgagg cgcggtgggtg aggaagggtca ggtctaggaa ctctaactcc ttgccactca  
60

jaaatgtcc tccctttcag aatatgcctt ccgcatgtct cgtctcagtg cccggctatt  
120

jgtgaagtc accaggccta ctaattccaa gtctatgaaa gtggtgaaac tgtttagtga  
180

tgcccttg gccagaaga aggagactta tgattggtat ccaaatcacc acacttacgc  
240

jaactcatg cagacgtcc gatttcttgg actctacaga gatgagcatc aggattttat  
300

jatgagcaa aaacgactaa agaagcttcg tggaaaggag aaaccaaaga aaggagaagg  
360

aaagagca gcaaaaagga aatagtgttg gtccctcaag agggagactt tcttcctcag  
420

jgaggagag aagaaagtgc atttattgtc ttccacata ttggaggaat gtcattctcc  
480

aatgaagt ttatttggag gaacacagtc atctccttgg tgaaatctaa tccggttaca  
540

gtggctgg tttcttgaac acattctaac tgtgcaaaat tatcttggcc ttggccgtgt  
600

ttgtgaggt ttacctgatt ctctaataa ataaatacct aagttattgt ttg  
653

10> 51  
11> 1610  
12> DNA  
13> Homo sapiens

00> 51  
gcgccagt cgccctagcag gtcctctacc ggcttattcc tgtgccggat cttcatcgcc



eolf-seql-S000001.txt

60

agggggcca ctgagacgtt tctgcctccc tctttcttcc tccgtctttt ctcttccctc  
120

ggttagtt tgcctggagc ttgaaaggag aaagcacggg gtcgccccaa accccttctg  
180

ttctgccc tacaagtgc cactaccgcc atgggcctca ctatctctc cctcttctcc  
240

tactatttg gcaagaagca gatgcgcatt ttgatggttg gattggatgc tgctggcaag  
300

taaccattc tgtataaact gaagttaggg gagatagtca ccaccattcc taccattggt  
360

taatgtgg aaacagtaga atataagaac atttgtttca cagtatggga tgttggtggt  
420

agatagaa ttaggcctct ctggaagcat tacttccaga ataccaggg tcttattttt  
480

ggtagata gcaacgatcg tgaaagaatt caggaagtag cagatgagct gcagaaaatg  
540

tctggtag atgaattgag agatgcagtg ctgctacttt ttgcaaacaac acaggatttg  
600

aaatgcta tggccatcag tgaaatgaca gataaactag ggcttcagtc tcttcgtaac  
660

aacatggt atgttcaagc cacttgtgca acacaaggaa ctggtctgta tgaaggactt  
720

ctggctgt caaatgagct ttcaaaacgt taaatgaaat tggatatcta accaaggaca  
780

tttgataa aattggtcta ggcttggtac aacaaaatta gtttgatatct tggttattaa  
840

agtatctg ggactggttt gggcagaata ttaaacttat tttgttgcca attattgttt  
900

cgagtata atgttgctat ttagcaatgt gcttggtttt aaagaaattc tccttgggaa  
960

aagtatcc tcttttaatt ttacttccca taagcgtaaa tgcttggaac tagctcttgt  
1020

acctttaa ataaattggt tgagtgtttt tgagccccag acaataatg ttttaaagtt  
1080

cccttgct actttactga tacctttatc attcctgaga cagtttgcta atttaaaaat  
1140

## eolf-seql-S000001.txt

tagcattcc atttgtattt atttctctcc cttgccaaaa agattttcta atactgcttg  
1200

accagccag agaaagatcc aaaacactac tcagctctct tgcactgagg aaatttttcc  
1260

cctacattg actcctggcc tacatcagcc aaacttaacc ttggtggggt ttggatttga  
1320

agccaatta gttctgtgct ggttgcaaag aattgatatt tagatgggtt ttaataactca  
1380

cagattgtc ttcccatatt gtgtcttttt tatgttgcatt gttgcttttg ttatcagcct  
1440

attttttgc tcagtatatg atagttctgc tgatgttttg tttattgggc agacatatct  
1500

cattaagag tttttggaaa actcatcaaa ttcgatgaat acattttctt cataacccat  
1560

cggaattat tcctaataaa atgataaaat acgtaaaaaa aaaggaattc  
1610

210> 52

211> 4221

212> DNA

213> Homo sapiens

400> 52

agcggcagt ggagttcgct gcgcgctgtt gggggccacc tgtcttttcg cttgtgtccc  
60

ctttctagt gtcgcgctcg agtcccgacg ggccgctcca agcctcgaca tgctgtacaa  
120

cacgtggta acggcccaga agcccaccgc cgtgaacggc tgcgtgaccg gacactttac  
180

cggccgaa gacttaaacc tgttgattgc caaaaacacg agattagaga tctatgtggt  
240

ccgcccag gggcttcggc ccgtcaaaga ggtgggcatg tatgggaaga ttgcggtcat  
300

agcttttc aggcccaagg gggagagcaa ggacctgctg tttatcttga cagcgaagta  
360

atgcctgc atcctggagt ataaacagag tggcgagagc attgacatca ttacgcgagc  
420

atggcaat gtccaggacc gcattggccg ccctcagag accggcatta ttggcatcat  
480

## eolf-seql-S000001.txt

jaccctgag tgccggatga ttggcctgcg tctctatgat ggccttttca aggttattcc  
540

ctagatcgc gataataaag aactcaaggc cttcaacatc cgcctggagg agctgcatgt  
600

attgatgtc aagtccctat atggttgcca agcacctact atttgctttg tctaccagga  
660

ctcagggg cggcacgtaa aaacctatga ggtgtctctc cgagaaaagg aattcaataa  
720

ggccttgg aaacaggaaa atgtcgaagc tgaagcttcc atggtgatcg cagtcccaga  
780

ccctttggg ggggccatca tcattggaca ggagtcaatc acctatcaca atggtgacaa  
840

acctggct attgcccctc ctatcatcaa gcaaagcacg attgtgtgcc acaatcgagt  
900

jaccctaatt ggctcaagat acctgctggg agacatggaa ggccggctct tcatgctgct  
960

ttggagaag gaggaacaga tggatggcac cgtcactctc aaggatctcc gtgtagaact  
1020

ttggagag acctctattg ctgagtgctt gacatacctt gataatgggtg ttgtgtttgt  
1080

gggtctcgc ctgggtgact cccagcttgt gaagctcaac gttgacagta atgaacaagg  
1140

ccctatgta gtggccatgg aaacctttac caacttagga cccattgtcg atatgtgcgt  
1200

ttggacctg gagaggcagg ggcaggggca gctggctact tgctctgggg ctttcaagga  
1260

gttcttttg cggatcatcc ggaatggaat tggaatccac gagcatgcca gcattgactt  
1320

acaggcatc aaaggattat ggccactgcg gtctgaccct aatcgtgaga cttatgacac  
1380

tggtgctc tcttttgtgg gccagacaag agttctcatg ttaaattggag aggaggtaga  
1440

aaaccgaa ctgatgggtt tcgtggatga tcagcagact ttcttctgtg gcaacgtggc  
1500

atcagcag cttatccaga tcacttcagc atcggtgagg ttggtctctc aagaacccaa  
1560

eolf-seq1-S000001.txt

gctctgggc agtgaatgga aggagcctca ggccaagaac atcagtgtgg cctcctgcaa  
1620

agcagccag gtggtggtgg ctgtaggcag ggccctctac tatctgcaga tccatcctca  
1680

jagctccgg cagatcagcc acacagagat ggaacatgaa gtggcttgct tggacatcac  
1740

ccattagga gacagcaatg gactgtcccc tctttgtgcc attggcctct ggacggacat  
1800

ccggctcgt atcttgaagt tgccctcttt tgaactactg cacaaggaga tgctgggtgg  
1860

jagatcatt cctcgctcca tctgatgac cacctttgag agtagccatt acctcctttg  
1920

jccttggga gatggagcgc ttttctactt tgggctcaac attgagacag gtctgttgag  
1980

jaccgtaag aaggtgactt tgggcaccca gccacacgta ttgaggactt ttcgttctct  
2040

ctaccacc aacgtctttg ctgtttctga ccgccccact gtcattctata gcagcaacca  
2100

aaattggtc ttctcaaagc tcaacctcaa ggaagtgaac tacatgtgtc cctcaattc  
2160

jatggctat cctgacagcc tggcgctggc caacaatagc acctcacca ttggcaccat  
2220

fatgagatc cagaagctgc acattcgac agttcccctc tatgagtctc caaggaagat  
2280

gctaccag gaagtgtccc agtggttcgg ggtcctctcc agccgcattg aagtccaaga  
2340

cgagtggg ggcacgacag ccttgaggcc cagcgctagc acccaggctc tgtccagcag  
2400

taagctcc agcaagctgt tctccagcag cactgctcct catgagacct cctttggaga  
2460

aggtggag gtgcataacc tacttatcat tgaccaaacac acctttgaag tgcttcatgc  
2520

accagttt ctgcagaatg aatatgccct cagtctgggt tcttgcaagc tgggcaaaga  
2580

ccaacact tacttcattg tgggcacagc aatggtgtat cctgaagagg cagagcccaa  
2640

agggtcgc attgtggtct ttcagtattc ggatggaaaa ctacagactg tggctgaaaa

eolf-seql-S000001.txt

2700

jaagtgaaa ggggccgtgt actctatggt ggaatttaac gggaagctgt tagccagcat  
2760

aatagcacg gtgcggctct atgagtggac aacagagaag gacgtgcgca ctgagtgcaa  
2820

actacaac aacatcatgg ccctctacct gaagaccaag ggcgacttca tcctggtggg  
2880

accttatg cgctcagtgc tgctgcttgc ctacaagccc atggaaggaa actttgaaga  
2940

attgctcga gactttaatc ccaactggat gagtgctgtg gaaatcttgg atgatgacaa  
3000

ttctgggg gctgaaaatg cctttaactt gtttgtgtgt caaaaggata gcgctgccac  
3060

ctgacgag gagcggcagc acctccagga ggttggctct ttccacctgg gcgagtttgt  
3120

atgtcttt tgccacggct ctctggtaat gcagaatctg ggtgagactt ccacccccac  
3180

aaaggctcg gtgctcttcg gcacgggtcaa cggcatgata gggctggtga cctcactgtc  
3240

agagctgg tacaacctcc tgctggacat gcagaatcga ctcaataaag tcatcaaaag  
3300

ttggggaag atcgagcact ccttctggag atcctttcac accgagcgga agacagaacc  
3360

ccacaggt ttcatcgacg gtgacttgat tgagagtttc ctggatatta gccgccccaa  
3420

tgacggag gtggtggcaa acctacagta tgacgatggc agcggtatga agcgagaggc  
3480

ctgcagac gacctcatca aggttgtgga ggagctaact cggatccatt agccaagggc  
3540

ggggcccc tttgctgacc ctcccaaag gctttgccct gctgccctcc cctcctctc  
3600

ccatcgtc ttcttggcca tgggaggcct ttccctaagc cagctgcccc cagagccaca  
3660

tcccctat gtggaagtgg ggcgggcttc atagagactt gggaatgagc tgaagggtgaa  
3720

attttctc cctggatttt taccagtctc acatgattcc agccatcacc ttagaccacc  
3780

## eolf-seql-S000001.txt

agccttgat tgggtgttgcc agttgtcctc cttccgggga aggattttgc agttctttgg  
3840

gaaaggaa gctgtgcgtg tgtgtgtgtg tatgtgtgtg tgtgtatgtg tatctcacac  
3900

atgcattg tcctcttttt atttagattg gcagtgtagg gagttgtggg tagtggggaa  
3960

agggttagg agggtttcat tgtctgtgaa gtgagacctt ccttttactt ttcttctatt  
4020

ctctgaga gcatcaggcc tagaggcctg actgccaagc catgggtagc ctgggtgtaa  
4080

acctggaga tgggtggatga tccccacgcc acagcccttt tgtctctgca aactgccttc  
4140

cggaaaga agaaggtggg aggatgtgaa ttgttagttt ctgagtttta ccaaataaag  
4200

gaatataa gaagaaaaaa a  
4221

!10> 53

!11> 1470

!12> DNA

!13> Homo sapiens

!00> 53

agccgcca gcgaggctgg ggatgggggc gccgctgctc tctcccggtt ggggagccgg  
60

ctgccggc cggcgctggt ggatgctgct ggcgcccctg ctgccggcgc tgctgctggt  
120

ggcccgcg ggggccctgg tggaggggct ctactgcggc acgcgggact gctacgaggt  
180

tgggcgtg agccgctcgg cgggcaaggc ggagatcgcg cgggcctacc gccagctggc  
240

ggcgctac caccctgacc gctaccggcc ccagcccgga gacgagggcc ccgggcggac  
300

cgcagagc gccgaggagg ctttcttctg ggtggcaacc gcctacgaga cactcaaggt  
360

ctcaggca gctgcagagc ttcaacagta ctgtatgcag aatgcctgca aggatgcctt  
420

tgggtgggt gttccagctg gaagtaaccc cttccgggag cctagatcct gtgctttact  
480

## eolf-seql-S000001.txt

gaagactc gagagaagtt tgctgaggaa tgccttcaag cacaaagtga tgaatgactg  
540

ttcaagtc tcaagaaaac acttttccct aactttttaga gatatttcag ccctttcctg  
600

ggcctggtc ctatagccaa aatcacagat attcatgagt ttctacttga gtgagaaaac  
660

gggtgaagg aatagaatth taaatagtaa taactgcttg ttttttttgt gcaagtactt  
720

atacataa gataaacaac aaccttacca ccaaacatac caaatgcac ctctttcata  
780

tgagttac taagatttct atacctggaa tatcatgtat gtttcattta ctggatgttt  
840

attttagg aaggaaaata gttttgttta tttaaacaac tgaatactta taaactgttg  
900

cctggaag ttatttattc cataaaaaat ttgttctttt gtcatgaatt tataattcct  
960

atgaagac cagaaagtac aaattgctgg gaggaagaat aggctttatt aatcaactga  
1020

gtcttgatt tttctaaatg ggaagattgc tttattttta acactaatta tgggagcaga  
1080

cttagcaa acttcttttg aaaagttaat gttatgatgt gcattaggct gccccatcgt  
1140

atataaat gaagcagatt tgatttttgt attcttacgt ttctctgctt tgtagttgtg  
1200

tgacttta aagaaataca gaatttcata tatttaaaaa tgtttaaaat gtgaccaca  
1260

acattgta aatgattaaa aactaacatg aaaatattac aacctaaaag aattcttaac  
1320

cacaagtg ttttacttcg acgatgtgcc tttgatttaa tttgggacac ttttttagaa  
1380

atacatta ttcgtgtttg caacggctct tgaagagctt ggaaataaaa tttctgctta  
1440

taatcaaa aaaaaaaaaa aaaaaaaaaa  
1470

10> 54  
11> 3321

eolf-seql-S000001.txt

212&gt; DNA

213&gt; Homo sapiens

400&gt; 54

gtgagtct ataactcgga gccgttgggt cggttcctgc tattccggcg cctccactcc  
60

cccccgcg ggtctgctct gtgtgccatg gacggcattg tcccagatat agccgttggg  
120

aaagcggg gatctgacga gcttttctct acttgtgtca ctaacggacc gtttatcatg  
180

gcagcaact cggcttctgc agcaaacgga aatgacagca agaagttcaa aggtgacagc  
240

gaagtgcag gcgtcccctc tagagtgatc cacatccgga agctccccat cgacgtcacg  
300

agggggaag tcattctcct ggggctgccc tttgggaagg tcaccaacct cctgatgctg  
360

aggggaaaa accaggcctt catcgagatg aacacggagg aggctgccaa caccatgggtg  
420

actactaca cctcggtgac ccctgtgctg cgcggccagc ccattctacat ccagttctcc  
480

accacaagg agctgaagac cgacagctct cccaaccagg cgcggggcca ggcggccctg  
540

aggcggatga actcgggtcca gtcggggaac ctggccttgg ctgcctcggc ggcggccgtg  
600

tcgcagggga tggcgatggc cgggcagagc cccgtgctca ggatcatcgt ggagaacctc  
660

ctaccctg tgaccctgga tgtgctgcac cagattttct ccaagttcgg cacagtgttg  
720

tgatcatca ccttcaccaa gaacaaccag ttccaggccc tgctgcagta tgcggacccc  
780

gagcgccc agcacgcca gctgtcgtg gacgggcaga acatctacaa cgcctgctgc  
840

gctgcgca tcgacttttc caagctcacc agcctcaacg tcaagtacaa caatgacaag  
900

ccgtgact acacacgccc agacctgcct tccggggaca gccagccctc gctggaccag  
960

catggccg cggccttcgg tgcacctggg ataatctcag cctctccgta tgcaggagct  
1020



eolf-seql-S000001.txt

gtttccctc ccacctttgc cattcctcaa gctgcaggcc tttccgttcc gaacgtccac  
1080

gcgccttg cccccctggc catccccctcg gcggcggcgg cagctgcggc ggcaggtcgg  
1140

cgccatcc cgggcctggc gggggcagga aattctgtat tgctggtcag caacctcaac  
1200

cagagagag tcacacccca aagcctcttt attcttttcg gcgtctacgg tgacgtgcag  
1260

gcgtgaaga tcctgttcaa taagaaggag aacgccctag tgcagatggc ggacggcaac  
1320

aggcccagc tggccatgag ccacctgaac gggcacaagc tgcacgggaa gcccatccgc  
1380

cacgtctc cgaagcacca gaacgtgcag ctgccccgcg agggccagga ggaccagggc  
1440

gaccaagg actacggcaa ctcaccctg caccgcttca agaagccggg ctccaagaac  
1500

ccagaaca tattcccgc ctcggccacg ctgcacctct ccaacatccc gccctcagtc  
1560

cgaggagg atctcaaggt cctgttttcc agcaatgggg gcgtcgtcaa aggattcaag  
1620

cttccaga aggaccgcaa gatggcactg atccagatgg gctccgtgga ggaggcggtc  
1680

aggccctca ttgacctgca caaccacgac ctcggggaga accaccacct gcgggtctcc  
1740

ctccaagt ccaccatcta ggggcacagg cccccacggc cggggcccct ggcgacaact  
1800

catcttc cagagaaaag ccacttttaa aacagctgaa gtgaccttag cagaccagag  
1860

tttatatt tttaaagaga aatcagttta cctgttttta aaaaaattaa atctagttca  
1920

ttgctcac cctgcggtga caggacagc tcaggctctt ggtgactgtg gcagcgggag  
1980

cccggccc tccacaccg gggccagacc ctcggggcca tgccttggtg gggcctgtgt  
2040

ggcgtggg gctgcaggt gggcgccccg accacgactt ggcttccttg tgccttaaaa  
2100

cctgcctt cctgcagcca cacaccacc cggggtgtcc tggggacca aggggtggg

eolf-seql-S000001.txt

2160

jgtcacacc agagagagggc agggggcctg gccggctcct gcaggatcat gcagctgggg  
2220

jcggcggcc gcggctgcga caccccaacc ccagccctct aatcaagtca cgtgattctc  
2280

ttcacccc gccccaggc cttcccttc tgccccagg cgggctcccc gctgctccag  
2340

gcggagct ggtcgacata atctctgtat tatatacttt gcagttgcag acgtctgtgc  
2400

agcaatat ttccagttga ccaaatattc taatcttttt tcatttatat gcaaaagaaa  
2460

agttttaag taacttttta tagcaagatg atacaatggg atgagtgtaa tctaaacttc  
2520

tggtggtat taccttgtat gctgttactt ttattttatt ccttgtaatt aagtcacagg  
2580

aggaccag tttccagaga gcaggcgggg ccgcccagtg ggtcaggcac agggagcccc  
2640

tcctatct tagagccct gagcttcagg gaaggggcgg gcgtgtcgcc gcctctggca  
2700

gcctccgg ttgccttaca ccacgccttc acctgcagtc gcctagaaaa cttgctctca  
2760

cttcaggg ttttttcttc cttcaaattt tggaccaaag tctcatttct gtgttttgcc  
2820

tcctctgat gctgggacct ggaaggcggg cgctcctcct gtcttctctg tgctctttct  
2880

cgcccccg cgtcctgtcc cgggggctct cctaggatcc ctttccgta aaagcgtgta  
2940

aaagggtgt aaatatttat aattttttat acctgttggt agaccgagg ggcggcggcg  
3000

gtttttta tggtagacaca aatgtatatt ttgctaacag caattccagg ctcaagtattg  
3060

accgcgga gccacagggg accccacgca cattccgttg ccttaccgga tggcttggtga  
3120

cggagaga accgattaaa accgtttgag aaactcctcc cttgtctagc cctgtgttcg  
3180

gtggacgc ttagagggca ggttggccag tctgtacctg gacttcgaat aaatcttctg  
3240

## eolf-seql-S000001.txt

atcctcgct ccgttccgcc ttaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa  
3300

aaaaaaaa aaaaaaaaaa a  
3321

?10> 55

?11> 2181

?12> DNA

?13> Homo sapiens

100> 55

jaagccgag cggcgcagag gacgccaggg cgcgcgccgc agccacccac cctccggacc  
60

ggcagctg ctgaccgcc atcgccatgg cccgcgggaa agccaaggag gagggcagct  
120

jaagaaatt catctggaac tcagagaaga aggagtttct gggcaggacc ggtggcagtt  
180

gtttaagat ccttctattc tacgtaatat tttatggctg cctggctggc atcttcatcg  
240

accatcca agtgatgctg ctcaccatca gtgaatttaa gcccacatat caggaccgag  
300

rgccccgcc aggattaaca cagattcctc agatccagaa gactgaaatt tcctttcgtc  
360

aatgatcc caagagctat gaggcataatg tactgaacat agttagggtc ctggaaaagt  
420

aaagattc agcccagagg gatgacatga tttttgaaga ttgtggcgat gtgcccagtg  
480

ccgaaaga acgaggagac tttaatcatg aacgaggaga gcgaaaggtc tgcagattca  
540

cttgaatg gctgggaaat tgctctggat taaatgatga aacttatggc tacaaagagg  
600

aaaccgtg cattattata aagctcaacc gagttctagg cttcaaacct aagcctccca  
660

aatgagtc cttggagact taccagtgga tgaagtataa cccaaatgtc cttcccggtc  
720

tgcactgg caagcgagat gaagataagg ataaagttgg aaatgtggag tattttggac  
780

ggcaactc ccttggtttt cctctgcagt attatccgta ctatggcaaa ctctgcagc  
840

## eolf-seql-S000001.txt

aaataacct gcagcccctg ctggccgtac agttcaccaa tcttaccatg gacactgaaa  
900

cgcataga gtgtaaggcg tacgggtgaga acattgggta cagtgagaaa gaccgttttc  
960

ggacgttt tgatgtaaaa attgaagtta agagctgatc acaagcacia atctttccca  
1020

agccattt aataagttaa aaaaagatac aaaaacaaaa acctactagt cttgaacaaa  
1080

gtcatacg tatgggacct acacttaatc tatatgcttt acactagctt tctgcattta  
1140

aggttaga atgtaaatta aagtgtagca atagcaacaa aatatttatt ctactgtaaa  
1200

acaaaaga aaaagaaaaa ttgagccttg ggacgtgccc atttttactg taaattatga  
1260

ccgtaact gacttgtagt aagcagtgtt tctggcccct aagtattgct gccttgtgta  
1320

ttatttag tgtacagtac tacaggtgca tactctgggc atttttcaag ccatgtttta  
1380

gtatctgt tttctacttt atgtgagcaa ggtttgctgt ccaagggtga aatattcaac  
1440

gaataaaa ctggcatggg aatttttttt tttttttttt ttttgttttt tggctctttc  
1500

aggtaatg gcccatcgat gagcattttt aacatactcc atagtctttt cctgtggtgt  
1560

ggtcttta tttttatttt tttcctgggg gctgggggtg gggtttgtca tgggggaact  
1620

cctttaaa ttttaagtga cactacagaa aaacacaaaa aggtgatggg ttgtgttatg  
1680

tgtattga atgctgtctt gacatctctt gccttgtcct ccggtatgtt ctaaagctgt  
1740

ctgagatc tggatctgcc catcactttg gctagtgaca gggctaatta atttgcttta  
1800

cattttct tttactttcc ttttttcctt tctggaggca tcacatgctg gtgctgtgtc  
1860

tatgaatg ttttaacat tttcatgggtg gaagaatttt atatttatgc agttgtacaa  
1920

eolf-seql-S000001.txt

ttattttt ttctgcaaga aaaagtgtaa tgtatgaaat aaaccaaagt cacttgtttg  
1980

aaataaatc tttattttga actttataaa aagcaatgca gtaccccata gactggtggt  
2040

atggtgtc tacagtgcaa aatccatggt ctaacatatg taataattgc caggagtaca  
2100

gctcttgt tgatcttgta ttcagtcagg ttaaaacaac ggacaataaa agaatgaaca  
2160

aaaaaaaaa a  
2181

10> 56

11> 1330

12> DNA

13> Homo sapiens

100> 56

aacctttc caagggagtg gttgtgtgat cgccatctta gggaaaagat gttctcgtcc  
60

ggcgccacc tggcgcgggc gaacccttc aacacgccac atctgcagct ggtgcacgat  
120

ttctcgggg acctccgcag cagctcccca gggcccacgg gccagccccg ccgccctcgc  
180

ccctggcag ccgccgccgt ggaagagtac agttgtgaat ttggctccgc gaagtattat  
240

actgtgtg gctttggtgg ggtcttaagt tgtggtctga cacacactgc tgtgggtccc  
300

ggatttag tgaaatgccg tatgcaggtg gacccccaaa agtacaaggg catatttaac  
360

attctcag ttacacttaa agaggatggt gttcgtgggt tggctaaagg atgggctccg  
420

tttccttg gctactccat gcagggactc tgcaagtttg gcttttatga agtctttaa  
480

cttgata gcaatatgct tggagaggag aatacttata tctggcgcac atcactatat  
540

ggctgcct ctgccagtgc tgaattcttt gctgacattg ccctgggtcc tatggaagct  
600

taaggttc gaattcaaac ccagccaggt tatgccaaca ctttgaggga tgcagctccc  
660

eolf-seq1-S000001.txt

aatgtata aggaagaagg cctaaaagca ttctacaagg gggttgctcc tctctggatg  
720

acagatac catacaccat gatgaagttc gcctgctttg aacgtactgt tgaagcactg  
780

caagtttg tggttcctaa gccccgcagt gaatgttcaa agccagagca gctgggttga  
840

attttagtag caggttacat agctggagtc ttttgtgcaa ttgtttctca ccctgctgat  
900

tgtggtat ctgtgttgaa taaagaaaaa ggtagcagtg cttctctggt cctcaagaga  
960

tggattta aaggtgtatg gaagggactg tttgcccgta tcatcatgat tggtagcctg  
1020

tgcactac agtggtttat ctatgactcc gtgaaggctc acttcagact tcctcgccct  
1080

cccacctg agatgccaga gtctctgaag aaaaagcttg ggttaactca gtagttagat  
1140

aagcaaat gtggactgaa tctgcttggt gatcagtgtt tgaagaaagt gcaaaaggaa  
1200

tttatata tttagacagt taggaaattg tctattcctg atataattac ttagtagctc  
1260

gcttaagg caagagtttc agatttactg ttgaaataaa cccaactggt catgaaaaaa  
1320

aaaaaaaa  
1330

10> 57

11> 3214

12> DNA

13> Homo sapiens

00> 57

gtgggagg agccagcggc cggggagggt ctagtctggt ctgtcttgcg gcagccgccc  
60

ttctgcgc ggtcacgccg agccagcggc tgggcctgga accggggccgt agcccccca  
120

ttcgccca ccacctccct accatggacc cccgcaaagt gaacgagctt cgggcctttg  
180

aaaatgtg taagcaggat ccgagcggtc tgcacaccga ggaaatgcgc ttctgaggg  
240

eolf-seql-S000001.txt

gtgggtgga gagcatgggt ggtaaagtac cacctgctac tcagaaagct aaatcagaag  
300

aaataccaa ggaagaaaaa cctgatagta agaaggtgga ggaagactta aaggcagacg  
360

accatcaag tgaggaaagt gatctagaaa ttgataaaga aggtgtgatt gaaccagaca  
420

gatgctcc tcaagaaatg ggagatgaaa atgcggagat aacggaggag atgatggatc  
480

gc aaatga taaaaaagtg gctgctattg aagccctaaa tgatggtgaa ctccagaaag  
540

attgactt attcacagat gccatcaagc tgaatcctcg cttggccatt ttgtatgcca  
600

jagggccag tgtcttcgtc aaattacaga agccaaatgc tgccatccga gactgtgaca  
660

agccattga aataaatcct gattcagctc agccttacia gtggcggggg. aaagcacaca  
720

cttctagg ccactgggaa gaagcagccc atgatcttgc ctttgctgt aaattggatt  
780

gatgaaga tgctagtga atgctgaaag aagttcaacc tagggcacag aaaattgcag  
840

catcggag aaagtatgag cgaaaacgtg aagagcgaga gatcaaagaa agaatagaac  
900

gttaagaa ggctcgagaa gagcatgaga gagcccagag ggaggaagaa gccagacgac  
960

tcaggagc tcagtatggc tcttttccag gtggctttcc tgggggaatg cctggtaatt  
1020

cccggagg aatgcctgga atgggagggg gcatgcctgg aatggctgga atgcctggac  
1080

aatgaaat tcttagtgat ccagaggttc ttgcagccat gcaggatcca gaagttatgg  
1140

gctttcca ggatgtggct cagaaccag caaatatgtc aaaataccag agcaacccaa  
1200

gttatgaa tctcatcagt aaattgtcag ccaaatttgg aggtcaagcg taatgtcctt  
1260

gataaata aagcccttgc tgaaggaaaa gcaacctaga tcaccttatg gatgtcgcaa  
1320

atacaaac cagtgtacct ctgaccttct catcaagaga gctgggggtgc tttgaagata

eolf-seql-S000001.txt

1380

tccctaccc ctctcccca aatgcagctg aagcatttta cagtggtttg ccattagggt  
1440

ttcattcag ataatgtttt cctactagga attacaaact ttaaacttt tttaaattctt  
1500

aaaatatatt aaaacaaatt taaagggcct gttaattctt atatttttct ttactaatca  
1560

tttgattt ttttctttga attattggca gggaatatac ttatgtatgg aagattactg  
1620

ctgagtga aataaaagt attagtgcga ggcaaacata actcatttga ggataaagt  
1680

gtgttgat atgtggttcc tgatgcattt tgacttgtct ttttaaagtc tttatctttt  
1740

tttaaaga tttatttcaa taaaactaat tgggaccacc cgtatttcag taggacctgg  
1800

agggattg gaagtacttg gcagggcagc agcaatcttg ctgtgtttga tataacatgc  
1860

ccctgggc aggttgccct taaatcttac actgttgtga agggatgttt tttttgtaat  
1920

ctgcagtag agttggagta cttagtcttc ttgttgtcca gtatatctaa taagtgtttt  
1980

atattatt tccacgtaag ggaaataagg tagtactttt ctttttatat ttctatgctt  
2040

aatctctt ttctagtca aaaattgcc aaatctgtgt ttgctttctg cttgctacat  
2100

gtctccct tacttttctt gagctaaaga caggcttttt ccaccggcat catcactgct  
2160

catcatta acagcgtaat tatacaagca tatttaatgc tgagtttaat ttaatatgta  
2220

acatatgg taattgtagg gtaataccca caacaactgt agtttcttac ttggccaaga  
2280

atgcttat ttaagtgtta gacttccatt ctggcaaaat cttgccttat cagaagacat  
2340

gaaagagg gattcccttt ggtgtttggt cttctactta gaaaaaccta ttgcagttag  
2400

tatcttgt agtattcatc tttgtattct gaagataagg tttgaattaa attgatacac  
2460



## eolf-seql-S000001.txt

cagagggga accgattttt tttatccaat gtgaattata aatgagataa tccacagtta  
 2520  
 tcattgtgg agttgttgag actatgaaag actcattgtc tttgtattca gctcttaa  
 2580  
 gtgtaacta tatccccacc tctgcttgct ttctttccct cccctccaat gataaagaaa  
 2640  
 tgataaatt ttctgttggt cattcaattc ttattttaaa taagactaag tataggcatt  
 2700  
 tacctgaca ttgctacgtt tctaccagtg tttcaattta aagtgcctagt gtttaaaaac  
 2760  
 ttttcaagg gataaggcct tctgtacttt gcttatttga agaatacagt gtaggagcag  
 2820  
 gaagtaaatt tctatggagt acattttctaa aataccacat ttctgaaatc ataaataagt  
 2880  
 tattcaggt tctaaccctt tgctgtacac aagcagacag aaatgcatct gttacataaa  
 2940  
 gagaaaaag ctattatgct gatggagcat gctttttaaa tccttttaaaa acactcacca  
 3000  
 ataaacttg catttgagct tgtgtgttct tttgttaatg tgtagagttc tcctttctcg  
 3060  
 aattgccag tgtgtacttg gcttaactca agaacagttt cttctggatt ccttatttga  
 3120  
 ctatttaac ctaattatat tctaattattg caaatattac cataagtggg taaaagtaaa  
 3180  
 tcctcttc tgaaaaaaaa aaaaaaaaaa aaaa  
 3214

?10> 58  
 ?11> 2973  
 ?12> DNA  
 ?13> Homo sapiens

?20>  
 ?21> misc\_feature  
 ?22> (1275)..(1275)  
 ?23> n is a, c, g, t or u

?20>  
 ?21> misc\_feature  
 ?22> (2933)..(2933)

eolf-seql-S000001.txt  
223> n is a, c, g, t or u  
400> 58  
jaggcaaat gttaatgagg caatgttaaa tatggacca atgtcagaca aatacataga  
60  
aggagtaag ggccaactct catgcataag gtatcccatc ctatagcaaa tcagatatat  
120  
jgtacgctt gatgccacaa attttttaaa aaattgtcca ttttggtgcg tgtgcacctc  
180  
:gccataaa tttgagtcag caccagcgac agctctgcag tcctcctatg tggactgat  
240  
aggtaggttg cagagcttca gctcacagca acacaatgca gctgagcagg caagcacagc  
300  
:acagccag aaacagttcc gactctacag aacaagacga cctttaagtt tccagagaa  
360  
atgagatgc tgatgttgaa gacgacacca cgggtaagat gttatttaaa tcagtaaaag  
420  
:tgactttg gaatcttttt cctttttctt ttaagaaaaa gtcaacgtta ggattaaata  
480  
:tattcaat agcaagtgc tgcaccagaa atttgctgca gtgtcagttg agggatattt  
540  
:tatacatt cagtcactct gtaaataatac atattgtttt cctttaaaat gggcactgaa  
600  
:atacagaa aaaaatcact ttataaaatg tgaggtttat aggtactgtg ttggtctgga  
660  
:tttcaagt gctttttaca aagatatatt tctcctaaaa acatacagat aaaaatttcg  
720  
:gactgctt taatatctaa ataaaatcta ccctatatac acacattgaa ttacattacc  
780  
:cagagatt aaaaaaaaaa gacacgacag ccatttttct catctgagta agaaagcata  
840  
:atcaaaaa tagtaatagc ctacaactgc aactatttat ttgcaaagaa tgctatttta  
900  
atattaag gctctagaaa gataaataag aaagaatatg gttagaaaag gggggaggga  
960  
gagaaaat aaaggagaaa atgcaggaga gagtagggag agagtctctc tctaccacat  
1020  
cccaatga aggattaagc attgactata aatgaaggga gctttgttag tttaatcact

eolf-seql-S000001.txt

1080

gaacaatta taaaaggact cgacaacaac gaggtttatt gaaaattttg cctaattgta  
1140

tgacccat gcagatgcct aaactgtatt tgcataataa aagaagggtg tatctgtttg  
1200

ttctaggct ttgatggaat atcagatatt gaaaatgtct ctctgcctgt tcaccttct  
1260

ttctcaca cctgntatct tatgcatttg tcctctccaa tgtatatgca cagagaggca  
1320

aggcatgtg gactgttcag gcagaaactt gtctacatta ccactctggac tgcaagagaa  
1380

attatacat ttaaacctgt cttataacca ctttactgat ctgcataacc agttaacca  
1440

ataccaat ctgaggaccc tggacatttc aaacaacagg cttgaaagcc tgctgtctca  
1500

ctacctcgg tctctgtgga acatgtctgc tgctaacaac aacattaaac ttcttgacaa  
1560

ctgataact gcttatcagt ggaatcttaa atatctggat gtttctaaga acatgctgga  
1620

aggttgtc ctcattaaaa atacactaag aagtctcgag gttctcaacc tcagtagtaa  
1680

aaactttgg acagttccaa ccaacatgcc ctccaaacta catatcgtgg acctgtctaa  
1740

tattctttg acacaaattc ttccaggtag attaataaac ctgacaaatc tcacacatct  
1800

acctgcac aacaataagt tcacattcat tccagaccaa tcttttgacc aactctttca  
1860

tgcaagag ataacccttt acaataacag gtggatcatgt gaccacaaac aaaacattac  
1920

acttactg aagtggatga tggaaacaaa agcccatgtg atagggactc catgttctac  
1980

aaatatca tctttaaagg aacataacat gtatcccaca ctttctggat ttacctcaag  
2040

tattcact gtaagtggga tgcagacagt ggacaccatt aactctctga gtgtggtaac  
2100

aaacccaaa gtgacccaaa taccacaaaca atatcgaaca aaggaaacaa cgtttggtgc  
2160

## eolf-seql-S000001.txt

actctaagc aaagacacca cctttactag cactgataag gcttttgtgc cctatccaga  
 2220  
 atacatcc acagagacta tcaattcaca tgaagcagca gctgcaactc taactattca  
 2280  
 tccaagat ggaatggta caaacacaag cctcactagc tcaacaaaat catccccaac  
 2340  
 ccatgacc ctaagtatca ctagtggcat gccaaataat ttctctgaaa tgcctcaaca  
 2400  
 gcacaacc cttaacttat ggagggaaga gacaaccaca aatgtaaaga ctccattacc  
 2460  
 ctgtggca aatgcttgga aagtaaagtc ttcatttctc ttattgctca atgttgtggt  
 2520  
 tgtgtggt gtctgagggt ctgcattttc tgaaactaat gaaagcactc ctccctgatg  
 2580  
 cagttggg aaaatatgtc catatctaac cagtgattcg agctatattt aagtattcaa  
 2640  
 aagccagt cttaacattt ctaactctga tgtaaatgaa gtaacttgtc ttaaataaaa  
 2700  
 aatgcaca atgtcttggt acttgctgct attttactgt cttaattaag taaactaatg  
 2760  
 tttctttt ataaaaaaaa tgaaatgttt taaggcttca atttattgca caaatataa  
 2820  
 catctaaa cttaatatg tattttatgt atgtttacac tgtcaaacat ctggaaaata  
 2880  
 aggtctat gctcataact gtgtcatttg gctttccagt cataccaact ttnagcagaa  
 2940  
 aaaaatgac ctcaccattt ttgttctagg gat  
 2973

10> 59  
 11> 872  
 12> DNA  
 13> Homo sapiens

00> 59  
 ggcagcca tctcgccgtg agacagcaag tgtcgcgag ccgtgcgatg ttgtcctcta  
 60  
 gccatgta ttcggctcct ggcagagact tggggatgga accgcacaga gccgcgggcc  
 120

## eolf-seql-S000001.txt

```

:ttgcagct gcgattttcg ccctacgttt tcaacggagg tactatactg gcaattgctg
180
agaagattt tgcaattggt gcttctgata ctcgattgag tgaagggttt tcaattcata
240
jcgggatag ccccaaagt taaaaattaa cagacaaaac agtcattgga tgcagcggtt
300
:catggaga ctgtcttacg ctgacaaaga ttattgaagc aagactaaag atgtataagc
360
:tcacaataa taaggccatg actacggggg caattgctgc aatgctgtct acaatcctgt
420
:tcaggcg cttctttcca tactatgttt acaacatcat cggaggactt gatgaagaag
480
aaagggggc tgtatacagc ttgatccag tagggcttta ccagagagac tccttcaagg
540
:ggaggctc agcaagtgcc atgctacagc ccctgcttga caaccagggt gggtttaaga
600
:atgcagaa tgtggagcat gttccgctgt ccttgacag agccatgcgg ctggtgaaag
660
:gtcttcat ttctgcggct gagagagatg tgtacactgg ggacgcactc cggatctgca
720
:gtgaccaa agagggcatc agggaggaaa ctgtttcctt aaggaaggac tgatctgtgt
780
:ctttatca ccaatcagtt cagacctggt tgattttgta ctttggaact gtaccttgga
840
:gttttgtt tattaaaaga gaaacctgaa gt
872

```

```

:10> 60
:11> 356
:12> DNA
:13> Homo sapiens

```

```

00> 60
:ttctctct cgcgcgcggt gtggtggcag caggcgcagc ccagcctcga aatgcagaac
60
cgccggcg agttcgtgga cctgtacgtg ccgcggaaat gtcgcgctag caatcgcac
120
cggtgcca aggaccacgc atccatccag atgaacgtgg ccgagggtga caaggtcaca
180

```

## eolf-seql-S000001.txt

gcaggttta atggccagtt taaaacttat gctatctgcg gggccattcg taggatgggt  
240

agtcagatg attccattct ccgattggcc aaggccgatg gcatcgtctc aaagaacttt  
300

gactggaga gaatcacaga tgtggaatat ttgtcataaa taaataatga aaacct  
356

210> 61

211> 3069

212> DNA

213> Homo sapiens

400> 61

gtttccgct gcatccagac ttcttcaggc ggtggctgga ggctgcgcac ctggggcctt  
60

aacatacaa agggattgcc aggacctgcg gcggcggcgg cgccggcggg ggctggggcg  
120

gggggcgg accatgagcc gctgagccgg gcaaacccca ggccaccgag ccagcggacc  
180

ccggagcgc agccctgcgc cgcggaccag gctccaacca ggccggcagg cggccacacg  
240

accgagcca gcgacccccg ggcgacgcgc ggggccaggg agcgctacga tggaggcgct  
300

atggcccgg ggcgcgctca cgggtcccct gagggcgctc tgtctcctgg gctgctgct  
360

agccacgcc gccgccgcgc cgtcgcccat catcaagttc cccggcgatg tcgccccaa  
420

icggacaaa gagttggcag tgcaatacct gaacaccttc tatggctgcc ccaaggagag  
480

cgcaacctg tttgtgctga aggacacact aaagaagatg cagaagttct ttggactgcc  
540

agacaggt gatcttgacc agaataccat cgagaccatg cggaagccac gctgcggcaa  
600

icagatgtg gccaaactaca acttcttccc tcgcaagccc aagtgggaca agaaccagat  
660

icatacagg atcattggct acacacctga tctggaccca gagacagtgg atgatgcctt  
720

ictcgtgcc ttccaagtct ggagcgatgt gacccactg cggttttctc gaatccatga  
780

## eolf-seql-S000001.txt

ggagaggca gacatcatga tcaactttgg ccgctgggag catggcgatg gatacccctt  
840

gacggtaag gacggactcc tggctcatgc cttcgcccca ggcactgggtg ttgggggaga  
900

tcccatttt gatgacgatg agctatggac cttgggagaa ggccaagtgg tccgtgtgaa  
960

tatggcaac gccgatgggg agtactgcaa gttccccttc ttgttcaatg gcaaggagta  
1020

aacagctgc actgatactg gccgcagcga tggcttcctc tgggtgctcca ccacctacaa  
1080

tttgagaag gatggcaagt acggcttctg tccccatgaa gccctgttca ccatgggcgg  
1140

aacgctgaa ggacagccct gcaagtttcc attccgcttc cagggcacat cctatgacag  
1200

gcaccact gagggccgca cggatggcta ccgctgggtg ggcaccactg aggactacga  
1260

gcgacaag aagtatggct tctgccctga gaccgccatg tccactgttg gtgggaactc  
1320

gaaggtgcc ccctgtgtct tccccttcac tttcctgggc aacaaatatg agagctgcac  
1380

agcgccggc cgcagtgacg gaaagatgtg gtgtgcgacc acagccaact acgatgacga  
1440

gcaagtgg ggcttctgcc ctgaccaagg gtacagcctg ttcctcgttg cagcccacga  
1500

ttggccac gccatggggc tggagcactc ccaagaccct ggggccctga tggcaccat  
1560

acacctac accaagaact tccgtctgtc ccaggatgac atcaagggca ttcaggagct  
1620

atggggcc tctcctgaca ttgaccttg caccggcccc acccccacac tgggccctgt  
1680

ctcctgag atctgcaaac aggacattgt atttgatggc atcgctcaga tccgtgggtg  
1740

ttcttctc ttcaaggacc ggttcatttg gcggactgtg acgccacgtg acaagcccat  
1800

ggccccctg ctgggtggcca cattctggcc tgagctcccg gaaaagattg atgcggtata  
1860

eolf-seql-S000001.txt

jaggcccca caggaggaga aggctgtgtt ctttgcaggg aatgaatact ggatctactc  
1920

jccagcacc ctggagcgag ggtaccccaa gccactgacc agcctgggac tgccccctga  
1980

jtccagcga gtggatgccg cctttaactg gagcaaaaac aagaagacat acatctttgc  
2040

igagacaaa ttctggagat acaatgaggt gaagaagaaa atggatcctg gctttcccaa  
2100

itcatcgca gatgcctgga atgccatccc cgataacctg gatgccgtcg tggacctgca  
2160

jgcggcggg cacagctact tcttcaaggg tgcctattac ctgaagctgg agaaccaaag  
2220

itgaagagc gtgaagtttg gaagcatcaa atccgactgg ctaggctgct gagctggccc  
2280

igctcccac aggcccttcc tctccactgc cttegataca ccgggcctgg agaactagag  
2340

iggaccggg aggggcctgg cagccgtgcc ttcagctcta cagctaata gcaattctcac  
2400

itacctgg taatttaaga ttccagagag tggctcctcc cggtgcccaa gaatagatgc  
2460

iactgtact cctcccaggc gcccttccc cctccaatcc caccaaccct cagagccacc  
2520

itaaagaga tcctttgata ttttcaacgc agccctgctt tgggctgccc tgggtgctgcc  
2580

iacttcagg ctcttctcct ttcacaacct tctgtggctc acagaacctt tggagccaat  
2640

agactgtc tcaagagggc actggtggcc cgacagcctg gcacagggca gtgggacagg  
2700

atggccag gtggccactc cagaccctg gcttttact gctggctgcc ttagaacctt  
2760

ttacatta gcagtttgct ttgtatgcac tttgtttttt tctttgggtc ttgttttttt  
2820

tccactta gaaattgcat ttcctgacag aaggactcag gttgtctgaa gtcactgcac  
2880

tgcattctc agcccacata gtgatggttc cctgttcac tctacttagc atgtccctac  
2940

agtctctt ctccactgga tggaggaaaa ccaagccgtg gcttcccgtc cagccctccc



eolf-seql-S000001.txt

3000

jccctccc ttcaaccatt ccccatggga aatgtcaaca agtatgaata aagacaccta  
3060

:gagtggc  
3069

?10> 62  
?11> 2876  
?12> DNA  
?13> Homo sapiens

100> 62  
:ctgtgagc agcgagatcc agggacagag tctcagcctc gccgctgctg ccgccgccgc  
60

jcccagaga ctgctgagcc cgtccgtccg ccgccaccac ccactccgga cacagaacat  
120

:agtcattgg ataaaaatga gctgggttcag aaggccaaac tggccgagca ggctgagcga  
180

tgatgaca tggcagcctg catgaagtct gtaactgagc aaggagctga attatccaat  
240

gggagagga atctttctctc agttgcttat aaaaatgttg taggagcccg taggtcatct  
300

lgagggtcg tctcaagtat tgaacaaaag acggaagggtg ctgagaaaaa acagcagatg  
360

:tcgagaat acagagagaa aattgagacg gagctaagag atatctgcaa tgatgtactg  
420

:tcttttgg aaaagttctt gatccccaat gcttcacaag cagagagcaa agtcttctat  
480

.gaaaatga aaggagatta ctaccgttac ttggctgagg ttgccgctgg tgatgacaag  
540

.agggattg tcgatcagtc acaacaagca taccaagaag cttttgaaat cagcaaaaag  
600

.aatgcaac caacacatcc tatcagactg ggtctggccc ttaacttctc tgtgttctat  
660

tgagattc tgaactcccc agagaaagcc tgctctcttg caaagacagc ttttgatgaa  
720

cattgctg aacttgatac attaagtga gagtcataca aagacagcac gctaataatg  
780

attactga gagacaactt gacattgtgg acatcggata cccaaggaga cgaagctgaa

eolf-seql-S000001.txt

840

gaggagaag gaggggaaaa ttaaccggcc ttccaacttt tgtctgctc attctaaaat  
900

cacacagta gaccatttgt catccatgct gtcccacaaa tagttttttg tttacgattt  
960

gacagggt tatgttactt ctatttgaat ttctatattt cccatgtggt ttttatgttt  
1020

atattaggg gagtagagcc agttaacatt tagggagtta tctgttttca tcttgagggtg  
1080

caatatgg ggatgtggaa tttttataca agttataagt gtttggcata gtacttttgg  
1140

acattgtgg cttcaaaagg gccagtgtaa aactgcttcc atgtctaagc aaagaaaact  
1200

ctacatac tggtttgtcc tggcggggaa taaaagggat cattggttcc agtcacagggt  
1260

agtaattg tgggtacttt aaggtttga gcacttaca ggctgtggta gaatcatacc  
1320

atggatac cacatattaa accatgtata tctgtggaat actcaatgtg tacacctttg  
1380

ctacagctg cagaagtgtt cctttagaca aagttgtgac ccattttact ctggataagg  
1440

agaaacgg ttcacattcc attatttgta aagttacctg ctgttagctt tcattatttt  
1500

ctacactc attttatttg tatttaaagt ttttaggcaa cctaagaaca aatgtaaaag  
1560

aaagatgca ggaaaaatga attgcttgggt attcattact tcatgtatat caagcacagc  
1620

gtaaaacaa aaacccatgt atttaacttt tttttaggat ttttgctttt gtgatttttt  
1680

tttttttt ttgatacttg cctaacatgc atgtgctgta aaaatagtta acagggaat  
1740

cttgagat gatggctagc tttgtttaat gtcttatgaa attttcatga acaatccaag  
1800

taattgtt aagaacacgt gtattaaatt catgtaagtg gaataaaagt tttatgaatg  
1860

cttttcaa ctactttctc tacagctttt catgtaaatt agtcttgggt ctgaaacttc  
1920

## eolf-seql-S000001.txt

ctaaaggaa attgtacatt ttttgaaatt tattccttat tccctcttgg cagctaattg  
1980

ctcttacca agtttaaaca caaaatttat cataacaaaa atactactaa tataactact  
2040

tttccatgt cccatgatcc cctctcttcc tccccaccct gaaaaaatg agttcctatt  
2100

tttctggga gaggggggga ttgattagaa aaaaatgtag tgtgttccat ttaaaatttt  
2160

gcataatggc attttctaac ttaggaagcc acaatgttct tggcccatca tgacattggg  
2220

agcattaac tgtaagtttt gtgcttccaa atcacttttt ggtttttaag aatttcttga  
2280

actcttata gcctgccttc aattttgatc ctttattctt tctatttgtc aggtgcacaa  
2340

attaccttc ctgttttagc cttctgtctt gtcaccaacc attcttactt ggtggccatg  
2400

acttggaag aaggccgcat gatctttctg gctccactca gtgtctaagg caccctgctt  
2460

ctttgcttg catcccacag actatttccc tcctcctatt tactgcagca aatctctcct  
2520

agttgatga gactgtgttt atctcccttt aaaaccctac ctatcctgaa tggctctgtca  
2580

gtctgcct ttaaaatcct tcctctttct tcctcctcta ttctctaaat aatgatgggg  
2640

aaagttata cccaaagctc actttacaaa atatttcctc agtactttgc agaaaacacc  
2700

acaaaaaat gccattttta aaaaggtgta ttttttcttt tagaatgtaa gctcctcaag  
2760

gcagggaca atgttttctg tatgttctat tgtgcctagt aactgtaaa tgctcaataa  
2820

attgatga tgggaggcag tgagtcttga tgataagggt gagaaactga aatccc  
2876

:10> 63  
:11> 3401  
:12> DNA  
:13> Homo sapiens

eolf-seql-S000001.txt

400> 63  
ggtacgagc cccgcccagag ctcaccgccc ctgctccct ctccgaccct ttgagccgtg  
60  
ccgttgcca gatgtccaca atgggaaacg aggccagtta cccggcggag atgtgctccc  
120  
ctttgacaa tgatgaaatt aaaaggctgg gcaggagggt taagaagttg gacttggaca  
180  
atcagggtc tctgagcgtg gaggagttca tgtccctgcc ggagctgcgc cacaaccgt  
240  
ggtgcggcg agtgatcgac gtcttcgaca ccgacggtga tggagaagtg gacttcaagg  
300  
attcatcct ggggacctcc cagttcagcg tcaagggcga cgaggagcag aagttgaggt  
360  
cgcttcag catttacgac atggataaag atggctacat ttccaacggg gagctcttcc  
420  
ggtgctgaa gatgatggtg ggcaacaacc tgacggactg gcagctccag cagctggctg  
480  
aaaaccat catcatcctg gacaaggatg gcgatgggaa gatatccttt gaggaattca  
540  
gctgtggt cagagacctg gagatccaca agaagctggt cctcatcgta tgagcctttt  
600  
ttacaagc accacccaac aacttctgct ttcttcccta tctctttcaa gatttgctca  
660  
acgtccaa ctgtctctct gacttatctg gaagtatttc ttttgtgaa gccatatgtc  
720  
aacaggag cttcatcacc aactcagtgc tattaattct ccttctctga atgactcagg  
780  
acctata gggggaagag caagtcaaat gagcatagtg gggaaagaaa aggaaatggc  
840  
ttataaac atcttttact ttgttttgat tcaaagacca aactagaact taaaagttc  
900  
aaataaga aagtatacat ttttgctggt atttctcatc attttgata tgggaggaaa  
960  
tataatth gcatgggtgt taggtgaact gtttcatth gcttgtgttc agatatcttg  
1020  
agattggt aacttcctat tgtagcaaca gggacaaata tatttgtctt tgctgggcat  
1080

eolf-seql-S000001.txt

icgtaatca cttttcttag gggacagaat cccatctttt ccttcggcag attgcagccc  
1140

attccccac aatgcatcca gaaatcgctg tgcattgttg aggggtagga gttcatttgg  
1200

tcctcctg acttggtgct ccagctcctg aacagaaact agcttcaggg ctcttatagg  
1260

atgctaag cctggactaa gtgcccagct cagccatcat cctcattagc agtgggtttc  
1320

agggttggc agccacacac agcattaatt tcaatgaagg ggacctccag ctaaataagg  
1380

agcaaagt gttctcccag aaagtgtctt cacctccgac actggtcctt acccccagg  
1440

agacaatg agacatttag ttagttgtcc tacggaggag aggcagtaga gtcaggctgc  
1500

tggaatct ccctaggatg ccaaagtggc attatgtctg ttgctcacag atgcagagac  
1560

jacaattgt gtctccacag cagaggtgga tgctagctac accagctatg ctgattttga  
1620

atcagatc tgaggcctag aagagaaact gagagctctc tcattccagg aagccttttc  
1680

tagtgga cttcagtgc agaagtcctc acacactaac agatctccac cattgggtga  
1740

cggagcct gtggttccag gggagatcca gaatgcatgt gtctcttccc acgcatttat  
1800

catgttgg tagctttaga tcagccatgg tgagaaaaga acaaaagctt ttagttgttt  
1860

gttttgtt ttggagaatt tgtttaccag taaatacatc actgcctgta ccccaaagt  
1920

ccagctcc ctgaggtgtc ccacatacta ttgtgagttc tcagagcatg aactgtcctc  
1980

aagagcag ggctaggact tgtcccagca tctgtgctc cataccaatc ctctttctca  
2040

gagaacca cttcccatat aagatgctta aggctctcaa aacagcagaa caatgaaaca  
2100

ctctccct acacttgctt agccaagaga taccactcag gtaacttttt tcaggacatg  
2160

agatctgt ttcaaggaga ttactgcta ttttatttgg aagaagctgg caactggtct

## eolf-seql-S000001.txt

2220

jacaaaaat agaaaaaaaa aaaaaaagtc cacaaattta atcacttgta gggaacccat  
2280

atcaagggt accctaccat atacttttgt atttaataga ttacttagaa accacaaaaa  
2340

gggaatcct taccctttca attcctgttc aaccctaata actgtgataa acgctcccaa  
2400

ctgtgggtg atcagggtta tgtaatgttc aaagattcag acacacctgg gtttggttc  
2460

gttgcaact gggttgttat cacactcact tcttttttagc tgtgtgagca tgaataattt  
2520

ttagcctc tctgtgtctt tccacctaata taaagaggat ccaccccagg gttattttga  
2580

tattcaaaa aggcatgcaa cacacctgga gcacaattcc actttcattc aactaattcc  
2640

tcccttcc ccttcttcc cttctacaa gatcaatatg taaaggagac atgaggctta  
2700

ggttgctt ttgaacactt acttagttct tagctacacc cactctaaaa ttaactggac  
2760

tagtgtac agcccatgtc caagcccaga gagaaaacaa tgggaacaat ttcaagggtcc  
2820

accactcc ttcatttgca gaggggacaa cagactttct gaccagagaa ctggagaatt  
2880

taaaacaa aatctctcat tccagcccaa cctatttaac tttttgtgga ggaattttac  
2940

ggaggaag tgagcacatg tcatgctagc caagaggaca ttattgtcat taaagagagg  
3000

ttatttat acaccctgca atgtgcacat taaaatatgg aaattttaaa attatgacca  
3060

ggcttgaa acatattgga ttacatgctc acatttaaca aagagaggaa atgtgtttca  
3120

ttctggag tggctggaat ttacaagcta attgttcaat aaatctactc aagatagtta  
3180

taaggctt tgtggcaatg accttgaact gagagcctgt atctggattt agcacttgaa  
3240

atctaact ggatatttgg gttaaaagaa tcacatttat tcccaaatcg gaatgctttg  
3300

## eolf-seql-S000001.txt

tttcctgt cagttaattg ccagttgcca acaaatctag ttctatacag tttcttgga  
3360

gatgataat aaacatttat tgagcaaaaa aaaaaaaaaa a  
3401

210> 64

211> 3454

212> DNA

213> Homo sapiens

100> 64

jaaatgact gctgtccatg caggcaacat aaacttcaag tgggatccta aaagtctaga  
60

atcaggact ctggcagttg agagactggt ggagcctctt gttacacagg ttacaaccct  
120

jtaaaccacc aatagtaaag ggccctctaa taagaagaga ggtcgttcta agaaggccca  
180

jttttggct gcactgttg aacaagcaac tgagaatttc ttggagaagg gggataaaat  
240

jcaaaagag agccagtttc tcaaggagga gcttgtggtt gctgtagaag atgttcgaaa  
300

aaagtgat ttgatgaagg ctgctgctgg agagttcgca gatgatccct gctcttctgt  
360

agcgaggc aacatgggtc gggcagctcg agctttgctc tctgctgtta cccggttgct  
420

tttttgct gacatggcag atgtctacaa attacttggt cagctgaaag ttgtggaaga  
480

igtatattg aaactgagga atgctggcaa tgaacaagac ttagggaatc agtataaagc  
540

tataaacct gaagtggata agctgaacat tatggcagca aaaagacaac aggaattgaa  
600

atgttggt catcgtgatc agatggctgc ggctagagga atcctgcaga gcaacgttcc  
660

tcctctat actgcatccc aggcattgct acagcaccct gatgtcgag cctataaggc  
720

acagggac ctgatataca agcagctgca gcaggcggtc acagggattt ccaatgcagc  
780

aggccact gcctcagacg atgcctcaca gcaccagggt ggaggaggag gagaactggc  
840

## eolf-seql-S000001.txt

atgcactc aataactttg acaaacaat cattgtggac cccttgagct tcagcgagga  
900

cgcttttagg ccttccctgg aggagcgtct ggaaagcatc attagtgggg ctgccttgat  
960

jccgactcg tcctgcacgc gtgatgaccg tcgtgagcga attgtggcag agtgtaatgc  
1020

jtccgccag gcctgcagga cctgcgtttc ggagtacatg ggcaatgctg gacgtaaaga  
1080

igaagtgat gcactcaatt ctgcaataga taaaatgacc aagaagacca gggacttgcg  
1140

igacagctt cgcaaagctg tcatggacca cgtttcagat tctttcctgg aaaccaatgt  
1200

icacttttg gtattgattg aagctgcaaa gaatggaaat gagaaagaag ttaaggaata  
1260

jcccaagtt ttccgtgaac atgccaaaca attgattgag gttgccaaact tggcctgttc  
1320

itctcaaat aatgaagaag gtgtaaagct tgttcgaatg tctgcaagcc agttagaagc  
1380

igtgttcct caggttatta atgctgcaac ctgggcttta gcaccaaacc cacagagtaa  
1440

itggcccaa gagaacatgg atctttttta agaacaatgg gaaaaacaag tccgtgttct  
1500

icagatgct gtcgatgaca ttacttccat tgatgacttc ttggctgtct cagagaatca  
1560

tttttgaa gatgtgaaca aatgtgtcat tgctctccaa gagaaggatg tggatggcct  
1620

accgcaca gctggtgcaa ttcgaggccg ggcagcccgg gtcattcacg tagtcacctc  
1680

agatggac aactatgagc caggagtcta cacagagaag gttctggaag ccactaagct  
1740

tctccaac acagtcatgc cacgttttac tgagcaagta gaagcagccg tggaaagcct  
1800

gtcgggac cctgcccagc ccatggatga gaatgagttt atcgatgctt cccgcctggg  
1860

atgatggc atccgggaca tcaggaaagc agtgctgatg ataaggaccc ctgaggagtt  
1920



eolf-seql-S000001.txt

jatgactct gactttgaga cagaggattt tgatgtcaga agcgagacga gcgtccagac  
1980

jaagacgat cagctgatag ctggccagag tgcccgggcg atcatggctc agcttcccca  
2040

jagcaaaaa gcgaagattc gggaacaggt ggccagcttc caggaagaaa agagcaagct  
2100

jatgctgaa gtgtccaaat gggacgacag tggcaatgac atcattgtgc tggccaagca  
2160

atgtgcatg attatgatgg agatgacaga ctttaccgga ggtaaaggac cactcaaaaa  
2220

acatcggat gtcatacgtg ctgccaagaa aattgctgag gcaggatcca ggatggacaa  
2280

ttggccgg accattcgag accattgccc cgactcggct tgcaagcagg acctgctggc  
2340

acctgcaa cgcatacggc tctactgcca ccagctgaac atctgcagca aggtcaaggc  
2400

jaggtgcag aatctcggcg gggagcttgt tgtctctggg gtggacagcg ccatgtccct  
2460

ttccaggca gccagaact tgatgaatgc tgtggtgcag acagtgaagg catcctacgt  
2520

tcctctacc aaataccaaa agtcacaggg tatggcttcc ctcaaccttc ctgctgtgtc  
2580

tgagatg aaggcaccag agaaaaagcc attggtgaag agagagaaac aggatgagac  
2640

agaccaag attaaacggg catctcagaa gaagcacgtg aaccacgtgc aggccctcag  
2700

jagttcaaa gctatggaca gcatctaagt ctgcccaggc cggccgcccc caccctctg  
2760

tcctgaat atcagtcact gttcgtcact caaatgaatt tgctaaatac aacactgata  
2820

agattcca cagggaatg ggcagactga accagtccag gtggtgaatt ttccaagaac  
2880

agtttaag ttgattaaaa atgcttttag aatgcaggag cctacttcta gctgtatttt  
2940

gtatgctt aaataaaata aaattcataa ccaagagatc cacattagct tgttagtaat  
3000

tctgacca agccgagatg ccattctctt agtgatggcg gcgttaggtt tgagagaagg

eolf-seql-S000001.txt

3060

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3120

aaagatgac ctgtggttaag caacctggca tcttaggaag cagtccttga gaaggcatgt  
3180

acagaaagg tctctgagga caaactcact cagtaaaaca taatgtatca tgaagaaaac  
3240

gattctcta tgacatgaaa tgaaaatttt aatgcattgt tataattact aatgtacgct  
3300

ctgcaggac attaataaag ttgctttttt aggctacagt gtctcgatgc cataatcaga  
3360

acactttt tttcctcttt ctcccagctt caaatgcaca attcatcatt gggctcactt  
3420

aaataactg cagtgtttcc gccttgcgtt gcag  
3454

:10> 65

:11> 1939

:12> DNA

:13> Homo sapiens

00> 65

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60

gcgtctac agctcacctg ccgccgccgg actccggttc cccgggatca ggccagagga  
120

aggcgtac ggcgaggacg gaaaccgcgt gccagacttc ggtggctcgg agccgccggg  
180

cagggagc cccgcctccg cgccgcgcgc cgccgccgcc tggtaaccgc cggccgggag  
240

gagatgtc gcccacggga tccttaacga ggcctaccgc aaagtgctgg accagctgtc  
300

ccgggaag cacctgcagt cgctcgtggc ccggggcgtg ggtgggagcc tcggcggcgg  
360

cgggggac gacgcggagc cgctctccaa gcgccactcg gacgggatct tcacggacag  
420

acagccgc taccggaaac aaatggctgt caagaaatac ttggcggccg tcctagggaa  
480

ggtataaa caaagggtta aaaacaaagg acgccgaata gcttatttgt agcgatgggt

eolf-seql-S000001.txt

540

accagctac cctgtgtata cagccctgac gcaatgaaaa gtcgttttcc aaactgactc  
600

acagtcata gctcgtgtgt tctatccaaa catgtattta tgtaatgaag taaagccatt  
660

aatgaatat tttgataata atattgtttt tctttctaca aagcactaga gaatgcacag  
720

ataactttg tggaccaatt attgatatat attataaata tatataaaga atatatatat  
780

atatatat ataaagtata gagagaagtt catacaaagc gtgcacaagg attgaaaatt  
840

gccgagct gtttatgttt ttataaaaaat aaatagaaaa gtagacaatc attgttttga  
900

attactcc tatttttgta aactggaatt aaaaggatag tatttttatc catgacaggc  
960

gaagatat tactacttac catttgctac tgtacataaa caatgatgcc ctgctccagg  
1020

gattttga ggtaaagata tggagaattg ctgaaggga ttttttccca gtgagtctct  
1080

ggcaggct gcttcaatcc cagcctaact caactgggct ctgtccccct ggttgggtgg  
1140

attccaat atttctgctt tctttgattc tccttttatg tgtagttgtc tctcttcaga  
1200

ctcagccc agaagaaaat tctcctgata aaacaacagc tcgatccaaa ttgtgcttct  
1260

ccagaatt caagcctctc cctaggagaa gagttgagga actgtacaga aaagggcggc  
1320

cgttagac cgctctcttt tctgtacttc ctgagtggcc agggaatcta atatcccaa  
1380

tagggcaa ttggaacaaa gtgaaggaca tagaggtata ttggaagagg cagagcctga  
1440

tggttaga ggacgaccct ggaaatggac tggtttgaga ttgccccagg tctgggaagc  
1500

agggcaaa tccagtccca gtggtcctga ctttgggcgc tgggtattgg aaatggatgc  
1560

agtacaat gtgtttttct ccagtgtgt ccatgcttct catcttgtga aatggccagg  
1620

## eolf-seql-S000001.txt

cctctcct ttgaaacctg ctctgtagga gctacccttt tcctttgtgg ttttatggag  
1680

ctctcctt cctaccctcc tgcactgttt aagtactgtt taccattttt cattcacttc  
1740

ttaaactt gtgaatgctt ctcaactttt tttttgtttg atgcaggcac ttattgtaaa  
1800

ttagaaac ccctctgtag ccactagtaa gtaattatgc actaaatâtg aaccctttgt  
1860

cttggtta ttgagtttgt aggtaaaatg tatttttcta cattattgct tattgcttag  
1920

aaaatttat ttcataaaa  
1939

!10> 66

!11> 2193

!12> DNA

!13> Homo sapiens

:00> 66

acacgaggc gggggcggtg catgacgcgc ctcgggggcg gtcctcgggc gcgcaccgct  
60

cttacact cgggcctcag aagtcctgtc cagtgaccgg agcggcgggc gcgagcggtt  
120

ttgtgggc tagaagaatc ctgcaaaaat gtctctctat ccctctctcg aagacttgaa  
180

tagacaaa gtaattcagg ctcaaactgc tttttctgca aaccctgcc aaccagcaat  
240

tgtcagaa gcttctgctc ctatcctca cgatggaaat ctctatccca gactgtatcc  
300

agctctct caatacatgg ggctgagttt aatgaagaa gaaatacgtg caagtgtggc  
360

tggtttct ggtgcaccac ttcaggggca gttggttagca agaccttcca gtataaacta  
420

tggtggct cctgtaactg gtaatgatgt tggaattcgt agagcagaaa ttaagcaagg  
480

ttcgtgaa gtcattttgt gtaaggatca agatggaaaa attggactca ggcttaaact  
540

tagataat ggtatatttg ttcagctagt ccaggctaatt tctccagcct cattgggttg  
600

## eolf-seql-S000001.txt

tgagattt ggggaccaag tacttcagat caatggtgaa aactgtgcag gatggagctc  
660

ataaagcg cacaaggtgc tcaaacaggc ttttgagag agattacca tgaccattcg  
720

acaggccc tttgaacgga cgattaccat gcataaggat agcactggac atgttggtt  
780

tctttaa aatggaaaa taacatccat agtgaaagat agctctgcag ccagaaatgg  
840

ttctcagc gaacataaca tctgtgaaat caatggacag aatgtcattg gattgaagga  
900

ctcaaatt gcagacatac tgtcaacatc tgggactgta gttactatta caatcatgcc  
960

cttttatac tttgaacata ttattaagcg gatggcacca agcattatga aaagccta  
1020

accacacc attcctgagg tttaaaattc acggcaccat ggaaatgtag ctgaacgtct  
1080

agtttcct tctttggcaa cttctgtatt atgcaagtga agccttccc gagccagcga  
1140

atatgctg catgaggacc tttctatctt acattatggc tggggatctt actctttcat  
1200

gatacctt gttcagattt caaaatagtt gtagccttat cctggtttta cagatgtgaa  
1260

ttcaagag atttactgac tttcctagaa tagtttctct actggaaacc tgatgctttt  
1320

aagccatt gtgattagga tgactgttac aggcttagct ttgtgtgaaa accagtcacc  
1380

tctcctag gtaatgagta gtgctgtcat attacttttag ttctatagca tacttgcac  
1440

taacatgc tatcatagta catttagaat gattgccttt gatttttttt tttaaattct  
1500

gtgtgtgt gtgtaaaatg ccaattaaga aactgggttt cattccatgt aagcattaaa  
1560

gtgtatgt aggtttcaag agattgtgat gattcttaaa ttttaactac cttcacttaa  
1620

tgcttgaa ctgtcgcctt aactatgtta agcatctaga ctaaaagcca aaatataatt  
1680

eolf-seql-S000001.txt  
:tgctgcct ttctaaaaac ccaaaatgta gttctctatt aacctgaaat gtacactagc  
1740  
:agaacagt ttaatggtac ttactgagct atagcatagc tgcttagttg tttttgagat  
1800  
:tttagtca acacataatg gaaacttctt tcttctaaaa gttgccagtg ccacttttaa  
1860  
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1920  
:ccttttgt tcatttgtgg attaagtggg ataatactta attttggcat ttgactctta  
1980  
:tattatgta acctagctac tttgggatgg tcttagaata tttttctgat aacttgttcc  
2040  
:ttcctgac tcttccttgc aaacaaaatg atagttgaca ctttatcctg atttttttct  
2100  
:tttttggg ttatgtctat tctaattaaa tatgtataaa taaagttaca ttttagtctg  
2160  
:aaaaaaaa aaaaaaaaaa aaaaaaaaaa aaa  
2193

10> 67  
11> 5189  
12> DNA  
13> Homo sapiens

00> 67  
ggccaagt cgggtggctg cggcgcgagg gccggcgctg gcggcggcaa cggggcactg  
60  
ctgggtga acaatgctgc aaaaaaagaa gagtcagaaa ctgccaacaa aaatgattct  
120  
aaagaagt tgtctgttga gagagtgtat cagaagaaga cacaacttga acacattctt  
180  
tcgtcctg atacatatat tgggtcagtg gagccattga cgcagttcat gtgggtgtat  
240  
tgaagatg taggaatgaa ttgcagggag gttacctttg tgccaggttt atacaagatc  
300  
tgatgaaa ttttggttaa tgctgctgac aataaacaga gggataagaa catgacttgt  
360  
taaagttt ctattgatcc tgaatctaac attataagca tttggaataa tgggaaaggc  
420

eolf-seql-S000001.txt

.tccagtag tagaacacaa ggtagagaaa gtttatgttc ctgctttaat ttttggacag  
480

.tttaacat ccagtaacta tgatgatgat gagaaaaaag ttacaggtgg tcgtaatggt  
540

.tggtgcaa aactttgtaa tattttcagt acaaagttta cagtagaaac agcttgcaaa  
600

.atacaaac acagttttta gcagacatgg atgaataata tgatgaagac ttctgaagcc  
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720

.atttaaga tggaaaaact tgacaaggat attgtggccc tcatgactag aagggcatat  
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900

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960

.aaaaggat tccagcaaat cagctttgta aatagtattg caactacaaa aggtggacgg  
1020

.cgtggatt atgtggtaga tcaagttggt ggtaaactga ttgaagtagt taagaaaaag  
1080

.caaagctg gtgtatcagt gaaaccattt caagtaaaaa accatatatg ggtttttatt  
1140

.ttgcctta ttgaaaatcc aacttttgat tctcagacta aggaaaacat gactctgcag  
1200

.caaaagtt ttgggtctaa atgccagctg tcagaaaaat tttttaagc agcctcta  
1260

.tggcattg tagaaagtat cctgaactgg gtgaaattta aggctcagac tcagctgaat  
1320

.gaagtgtt catcagtaaa atacagtaaa atcaaaggta ttcccaaact ggatgatgct  
1380

.tgatgctg gtggtaaaca ttccctggag tgtacactga tattaacaga gggagactct  
1440

.caaatcac tggctgtgtc tggattaggt gtgattggac gagacagata cggagttttt  
1500

.actcaggg gcaaaattct taatgtacgg gaagcttctc ataaacagat catggaaaat

eolf-seql-S000001.txt

1560

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1620

agaatctc tgaaaacctt acgctatgga aagattatga ttatgaccga tcaggatcaa  
1680

tggttctc acataaaagg cctgcttatt aatttcaccc atcacaattg gccatcactt  
1740

gaagcatg gttttcttga agagttcatt actcctattg taaaggcaag caaaaataag  
1800

ggaacttt ccttctacag tattcctgaa ttgacgaat ggaaaaaaca tatagaaaac  
1860

gaaagcct ggaaaataaa gtactataaa ggattgggta ctagtacagc taaagaagca  
1920

ggaatatt ttgctgatat ggaaaggcat cgcaccttgt ttagatatgc tggtcctgaa  
1980

tgatgctg ccattacctt ggcatttagt aagaagaaga ttgatgacag aaaagaatgg  
2040

aacaaatt ttatggaaga ccggagacag cgtaggctac atggcttacc agagcaattt  
2100

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2160

cttctcaa actcagacaa tgaaagatct ataccatctc ttgttgatgg ctttaaacct  
2220

ccagcggg aagttttatt tacctgtttc aagaggaatg ataaacgtga agtaaaagtt  
2280

ccagttgg ctggctctgt tgctgagatg tcggcttatc atcatggaga acaagcattg  
2340

gatgacta ttgtgaattt ggctcagaac tttgtgggaa gtaacaacat taacttgctt  
2400

gcctattg gtcagtttgg aactcggctt catggtggca aagatgctgc aagccctcgt  
2460

tattttca caatgttaag cactttagca aggctacttt ttctgctgt ggatgacaac  
2520

ccttaagt tcctttatga tgataatcaa cgtgtagagc ctgagtggta tattcctata  
2580

tcccatgg ttttaataaa tgggtgctgag ggcattggta ctggatgggc ttgtaaacta  
2640



## eolf-seql-S000001.txt

caactatg atgctagggg aattgtgaac aatgtcagac gaatgctaga tggcctggat  
2700

tcattccca tgcttccaaa ctacaaaaac tttaaaggca cgattcaaga acttgggtcaa  
2760

ccagtatg cagtcagtgg tgaaatattt gtagtggaca gaaacacagt agaaattaca  
2820

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2880

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2940

tgtgaaat ttgtggtgaa aatgactgaa gagaaactag cacaagcaga agctgctgga  
3000

gcataaag tttttaaact tcaaactact cttacttgta attccatggg actttttgat  
3060

tatgggat gtctgaagaa atatgaaact gtgcaagaca ttctgaaaga attctttgat  
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acgattaa gttattacgg ttacgtaag gagtggcttg tgggaatgtt gggagcagaa  
3180

tacaaagc ttaacaatca agcccgtttc attttagaga agatacaagg gaaaattact  
3240

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3300

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3360

ccagcatg atgatagttc ctccgattca ggaactcctt caggcccaga ttttaattat  
3420

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3480

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3540

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3600

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3660

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3720

eolf-seql-S000001.txt

.tacagcta tgaaggcaga tgccagcaaa aagttgctga agaagaagaa gggatgatctt  
3780

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4020

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4080

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4200

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4260

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4320

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4440

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4500

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4560

agaatttg gcattccaaa gaagactaca acacaaaag gtaaaggccg aggggcaaag  
4620

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4680

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4740

cccctcag acttccctac tgagccacct tctctgccac gaaccggctc ggctaggaaa  
4800

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eolf-seql-S000001.txt

4860

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4920

ctctgtct cagacttttg tacatctggc ttattttaat gtgatgatgt aattgacggc  
4980

tttattat tgtggtaggc cttttaacat ttgtttctta cacatacagt tttatgctct  
5040

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5100

tgcattag cacagatttt aattgtcatg gttacaaact acagacctgc tttttgaaat  
5160

aatttaaa cattaataat ggaactgtg  
5189

10> 68  
11> 2836  
12> DNA  
13> Homo sapiens

00> 68  
ccctcagc gtccggccga ggcgcggtgt atgctgagcc gctgccgcag cgggctgctc  
60

cgtcctgg gccttagctt cctgctgcag acccgccggc cgattctcct ctgctctcca  
120

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180

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240

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300

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360

aatggctg ccaatgctca gaagaataaa ttcttgattg atgggtttcc aagaaatcaa  
420

caaccttc aaggatggaa caagaccatg gatgggaagg cagatgtatc tttcgttctc  
480

tttgact gtaataatga gatttgtatt gaacgatgtc ttgagagggg aaagagtagt  
540

aggagtgt atgacaacag agagagcttg gaaaagagaa ttcagacctt ccttcagtca

eolf-seql-S000001.txt

600

aaagccaa ttattgactt atatgaagaa atggggaaaag tcaagaaaat agatgcttct  
660

atctgttg atgaagtttt tgatgaagtt gtgcagattt ttgacaagga aggctaattc  
720

aacctgaa agcatccttg aaatcatgct tgaatattgc tttgatagct gctatcatga  
780

ccttttta aggcaattct aatctttcat aactacatct caattagtgg ctggaaagta  
840

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900

tcaggttt aacttcacct tagttatggg gtcacacaaa cgaagggtat cagctatttt  
960

tttaaatt caaaaagaat atccctttta tagtttggtgc cttctgtgag caaaactttt  
1020

gtacgcgt atatatccct ctagtaatca caacatttta ggatttaggg atacctgctt  
1080

tctttttc ttgcaagttt taaatttcca accttaagtg aatttggtga ccaaatttca  
1140

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1200

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1260

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1320

tccaagat ttgggttggg ggcactaggg gttcagagcc tggcagaatt gtcagcttta  
1380

ctgacata atctaagggg atggggcaag gatcacatct aatgcttggt tccttatact  
1440

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1500

gaaatgca tgtggctaga tttatgctaa aatgattctc agttagcatt ttagtaacac  
1560

caaagggt tttttttggt tgttttctag acttaataaa agcttaggat taattagaag  
1620

gcaatcta gttaaatttc ccatttgtat tttattttct tgaatacttt tttcatagtt  
1680

## eolf-seql-S000001.txt

ttgttttaa aaagatttaa aaatcattgc actttgggtca gaaaaataat aaatatatct  
1740

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1800

tgaagcac cgaaagataa atgattttta aaaggctata gagtccaaag gaatattctt  
1860

acaccaat tcttccttta aaaatctctg aggaatttgt tttcgctta ctttttttc  
1920

ctgtcaca atgctaagtg gtatccgagg ttcttaatat gagatttaaa atcttaaaat  
1980

ttcttatt ttcagcactt acatcatttg gtacacaggg tcaaataaggg caaataattt  
2040

tctttgta taatagattt gatatttaaa gtcactggaa ataggacaag ttaatggatg  
2100

tttatatt ttaatagaat catttatttc tatgtgttat gaaattcact taatgataaa  
2160

tttcaaca tacttgccat tagaaaacaa agtattgcta agtactataa catattggcc  
2220

taaaattc atattgagat tatcttggtt tcttggaaga gataggaatg agttcttctc  
2280

gtgttgca ggccagcaaa tacagaggtg gtttaatcaa acagctctag tatgaagcaa  
2340

gtaaagac taaggtttcg agagcattcc tactcacata agtgaagaaa tctgtcagat  
2400

gaatctaa atatttatag tgagattgtg aaagcaacct taaagttttg aagaagactg  
2460

gagactag gtgctttgct tcctttcctc aggtatcttt ctgtggcatt tgagaacaga  
2520

ccaagaaa catggtaatt actaaattat gaggctttgc ttttggttg cttttaagta  
2580

aaaacatg ttggcaacat tgagttttgg agttgattga gataatatga cttactagt  
2640

tgtcattc catttggtta agatacagtc accaagaatg ttttgagttt ttgaaagac  
2700

caatttaa gccttgctta tttttaaatt atttccattc agtgatgttg gatgtatctc  
2760

eolf-seql-S000001.txt

ttatttag taaataatct caataaatTT tgtgctgtgg cctttgctaa aaaaaaaaaa  
2820

.aaaaaaaa aaaaaa  
2836

10> 69  
11> 1500  
12> DNA  
13> Homo sapiens

00> 69  
ttggagga gttgttgTTa ggccgtcccg gagaccggt cgggaggag gaaggTggca  
60

atggTgtt ggaaagcact atggTgtgtg tggacaacag tgagtatatg cggaatggag  
120

ttcttacc caccaggctg caggcccagc aggatgctgt caacatagtt tgtcattcaa  
180

accgcag caaccctgag aacaacgtgg gccttatcac actggctaata gactgtgaag  
240

ctgaccac actcaccca gacactggcc gtatcctgtc caagctacat actgtccaac  
300

aagggcaa gatcaccttc tgcacgggca tccgcgtggc ccatctggct ctgaagcacc  
360

caaggcaa gaatcacaag atgcgcatca ttgcctttgt gggagagcca gtggaggaca  
420

gagaagga tctggTgaaa ctggctaaac gcctcaagaa ggagaaagta aatgttgaca  
480

atcaattt tggggaagag gaggtgaaca cagaaaagct gacagccttt gtaaacacgt  
540

aatggcaa agatggaacc ggttctcatc tggTgacagt gcctcctggg cccagtttgg  
600

gatgctct catcagttct ccgattttgg ctggTgaagg tggTgccatg ctgggtcttg  
660

gccagtga ctttgaattt ggagtagatc ccagtgtga tcctgagctg gccttgcccc  
720

cgtgtatc tatggaagag cagcggcagc ggcaggagga ggaggcccg cgggcagctg  
780

gcttctgc tgctgaggcc gggattgcta cgactgggac tgaaggTgaa agaggTggaa  
840

eolf-seql-S000001.txt

:cgaagtcc tgggactgcg ggatgctaaa cattgaaagc tgggtgtagg cactgcaggg  
900

agtggtgga ggtctgacag ggtaggaata tgtgggaggg ctgggctagg aatggccttg  
960

.ggctggcc tgtgtggata tggcaccaat tctaccctgc tctcttttc cttttcccag  
1020

:tcagacga tgccctgctg aagatgacca tcagccagca agagtttggc cgcactgggc  
1080

cctgacct aagcagtatg actgaggaag agcagattgc ttatgccatg cagatgtccc  
1140

'cagggagc agagtttggc caggcggaat cagcagacat tgatgccagc tcagctatgg  
1200

acatctga gccagccaag gaggaggatg attacgacgt gatgcaggac cccgagttcc  
1260

cagagtgt cctagagAAC .ctcccaggtg tggatcccaa caatgaagcc attcgaaatg ...  
1320

atgggctc cctggcctcc caggccacca aggacggcaa gaaggacaag aaggaggaag  
1380

aagaagtg agactggagg gaaagggtag ctgagtctgc ttaggggact gcatgggaag  
1440

cggaatat agggtagat gtgtgttata tgtaaccatt acagcctaaa taaagcttgg  
1500

10> 70

11> 895

12> DNA

13> Homo sapiens

00> 70

catcttgc gtccccgcgt gtgtgcgcct aatctcaggt ggtccacccg agacccttg  
60

caccaacc ctagtcccc cgcgcggccc ttattcgctc cgacaagatg aaagaaacaa  
120

atgaacca ggaaaaactc gccaaactgc aggcacaagt gcgcattggg gggaaaggaa  
180

gctcgcag aaagaagaag gtgggtcata gaacagccac agcagatgac aaaaaacttc  
240

ttctcctt aaagaagtta ggggtaaaca atatctctgg tattgaagag gtgaatatgt  
300

eolf-seql-S000001.txt

acaaacca aggaacagtg atccacttta acaaccctaa agttcaggca tctctggcag  
360

aacacttt caccattaca ggccatgctg agacaaagca gctgacagaa atgctacca  
420

atcttaaa ccagcttggt gcggatagtc tgactagttt aaggagactg gccgaagctc  
480

cccaaaca atctgtggat ggaaaagcac cacttgctac tggagaggat gatgatgatg  
540

gttccaga tcttgtggag aattttgatg aggcttccaa gaatgaggca aactgaattg  
600

tcaacttc tgaagataaa acctgaagaa gttactggga gctgctatct tatattatga  
660

gcttttta agaaattttt gtttatggat ctgataaaat ctagatctct aatattttta  
720

ccaagcc ccttggaacac tgcagctctt ttcagttttt gcttatacac aattcattct  
780

gcagctaa ttaagccgaa gaagcctggg aatcaagttt gaaacaaaga ttaataaagt  
840

tttgcta gtaaaaaaaaa aaaaaaaaaa aaaaataaaa aaaaaaaaaa aaaaa  
895

10> 71  
11> 1777  
12> DNA  
13> Homo sapiens

00> 71  
ctaccctc gccccgcccg cggtcctccg tcggttctct cattagtcca cggtctggtc  
60

cagctacc cgccttcgtc tccgagtttg cgactcgcgg gaccggcgtc cccggcgcgga  
120

aggctgga ctcggattcg ttgcctgagc aatggctgcc atccggaaga aactggtgat  
180

ttggtgat ggagcctgtg gaaagacatg cttgctcata gtcttcagca aggaccagtt  
240

cagaggtg tatgtgccca cagtgtttga gaactatgtg gcagatatcg aggtggatgg  
300

agcaggtg gagttggctt tgtgggacac agctgggcag gaagattatg atcgccctgag  
360



eolf-seql-S000001.txt

ccctctcc taccagata ccgatgttat actgatgtgt ttttccatcg acagccctga  
420

gtttagaa aacatcccag aaaagtggac cccagaagtc aagcatttct gtcccaacgt  
480

ccatcatc ctggttggga ataagaagga tcttcggaat gatgagcaca caaggcggga  
540

tagccaag atgaagcagg agccggtgaa acctgaagaa ggcagagata tggcaaacag  
600

ttggcgct tttgggtaca tggagtgttc agcaaagacc aaagatggag tgagagaggt  
660

ttgaaatg gctacgagag ctgctctgca agctagacgt ggggaagaaa aatctggttg  
720

ttgtcttg tgaaaccttg ctgcaagcac agcccttatg cggttaattt tgaagtgtg  
780

tattaatc ttagtgtatg attactggcc tttttcattt atctataatt tacctaagat  
840

caaatcag aagtcattct gctaccagta tttagaagcc aactatgatt attaacgatg  
900

caaccctg ctggcccacc agggtccttt tgacactgct ctaacagccc tctctgcac  
960

ccacctga cacaccaggc gctaattcaa ggaatttctt aacttcttgc ttctttctag  
1020

agagaaac agttggtaac ttttgtcaat taggctgtaa ctactttata actaacatgt  
1080

tgccctat tatctgtcag ctgcaaggta ctctgggtgag tcaccacttc agggctttac  
1140

cgtaacag attttggttg catagctctg ggggtgggcag ttttgaaaat gggctcaacc  
1200

aaaagccc aagttcatgc agctgtggca gagttacagt tctgtgggtt catgttagtt  
1260

cttatagt tactgtgtaa ttagtgccac ttaatgtatg ttaccaaaaa taaatatatc  
1320

cccagact agatgtagta ttttgtataa ttggattcta atactgtcat ctcaagaagt  
1380

atggttta aagaagtgtg ttggaaataa agtcagatgg aaattcattt taaattcccc  
1440

gtcactt ttctgataaa agatggccat attaccctt ttcggcccca tgtatctcag

eolf-seql-S000001.txt

1500

.ccccatgg agctgggcta agtaaataagg aattgggttc acgcctcagg caattagaca  
1560

ttggaaga tggcataacc tgtctcacct ggacttaagc gtctggctct aattcacagt  
1620

tctttctc ctcaactgtat ccagggtccc tcccagagga gccaccagtt ctcatgggtg  
1680

actcagtc tctcttctct ccagctgact aaactttttt tctgtaccag ttaatttttc  
1740

actactaa tagaataaag gcagttttct aaaaaaa  
1777

10&gt; 72

11&gt; 1336

12&gt; DNA

13&gt; Homo sapiens

00&gt; 72

ggcttgca gagccggcgc cggaggagac gcacgcagct gactttgtct tctccgcacg  
60

tgttacag aggtctccag agccttctct ctctgtgca aaatggcaac tcttaaggaa  
120

actcattg caccagttgc ggaagaagag gcaacagttc caaacaataa gatcactgta  
180

gggtgttg gacaagttgg tatggcgtgt gctatcagca ttctgggaaa gtctctggct  
240

tgaacttg ctcttgtaga tgttttggaa gataagctta aaggagaaat gatggatctg  
300

gcatggga gcttatttct tcagacacct aaaattgtgg cagataaaga ttattctgtg  
360

cgccaatt ctaagattgt agtggtaact gcaggagtcc gtcagcaaga aggggagagt  
420

gctcaatc tgggtgcagag aaatgttaat gtcttcaaatt cattattcc tcagatcgtc  
480

gtacagtc ctgattgcat cataattgtg gtttccaacc cagtggacat tcttacgtat  
540

tacctgga aactaagtgg attaccctaaa caccgcgtga ttggaagtgg atgtaatctg  
600

ttctgcta gatttcgcta ccttatggct gaaaaacttg gcattcatcc cagcagctgc

eolf-seql-S000001.txt

660  
ttggatgga ttttggggga acatggcgac tcaagtgtgg ctgtgtggag tgggtgtgaat  
720  
ggcaggtg tttctctcca ggaattgaat ccagaaatgg gaactgacaa tgatagtga  
780  
ttggaagg aagtgcataa gatgggtggtt gaaagtcct atgaagtcac caagctaaaa  
840  
atatacca actgggctat tggattaagt gtggctgac ttattgaatc catgttgaaa  
900  
tctatcca ggattcatcc cgtgtcaaca atggtaaagg ggatgtatgg cattgagaat  
960  
agtcttcc tgagccttcc atgtatcctc aatgcccggg gattaaccag cgttatcaac  
1020  
gaagctaa aggatgatga ggttgctcag ctcaagaaaa gtgcagatac cctgtgggac  
1080  
ccagaagg acctaaaaga cctgtgacta gtgagctcta ggctgtagaa atttaaaaac  
1140  
caatgtga ttaactcgag cctttagttt tcatccatgt acatggatca cagtttgctt  
1200  
atcttctt caatatgtga atttgggctc acagaatcaa agcctatgct tggtttaatg  
1260  
tgcaatct gagctcttga acaataaaaa ttaactattg tagtgcgaaa aaaaaaaaaa  
1320  
aaaaaaaa aaaaaa  
1336

10> 73  
11> 1414  
12> DNA  
13> Homo sapiens

00> 73  
ctctgccc gccccagcc ctgcgccac ctcggcgcc cgcacatctg cctgctcagc  
60  
cagacggc gccccgaccc ccgggcgcgg gatccagcca ggtgggagcc ccgcagatga  
120  
tctctgaa ggtgtgctg aaccagtgcc agcctgccct gtctgcagca tcggcctgat  
180  
ggtggtga ctgatccctc agggctccgg agccatgtgg cccaacggca gttccctggg

eolf-seql-S000001.txt

240

cctgtttc cggcccacaa acattaccct ggaggagaga cggctgatcg cctcgccctg  
300

tcgccgcc tccttctgcg tggtagggcct ggctccaac ctgctggccc tgagcgtgct  
360

cgggcgcg cggcaggggg gttagcacac gcgctcctcc ttctcacct tcctctgcgg  
420

tcgtcctc accgacttcc tggggctgct ggtgaccggt accatcgtgg tgtcccagca  
480

ccgcgctc ttcgagtggc acgccgtgga cctggctgc cgtctctgtc gcttcatggg  
540

tcgtcatg atcttcttcg gcctgtcccc gctgctgctg ggggccgcca tggcctcaga  
600

gtacctg ggtatcaccc ggcccttctc gcgcccgcg gtcgcctcgc agcgccgcg  
660

gggccacc gtggggctgg tgtggggcgc cgcgctggcg ctgggcctgc tgcccctgct  
720

gcgtgggt cgctacaccg tgcaataccc ggggtcctgg tgcttctga cgctgggcgc  
780

agtccggg gacgtggcct tcgggctgct cttctccatg ctgggcggcc tctcggtcgg  
840

tgtccttc ctgctgaaca cggtcagcgt ggccaccctg tgccacgtct accacgggca  
900

aggcggcc cagcagcgtc cccgggactc cgaggtggag atgatggctc agctcctggg  
960

tcatgggtg gtggccagcg tgtgttggt gcccttctg gtcttcacgc ccagacagt  
1020

tcgaaaac ccgcctgcca tgagccccgc cgggcagctg tcccgcacca cggagaagga  
1080

tgctcctc tacttgcgcg tggccacctg gaaccagatc ctggaccctt ggggttatat  
1140

tgctccgc cgcgccgtgc tccggcgtct ccagcctcgc ctacgacccc ggcccaggtc  
1200

tgctcctc cagccccagc tcacgcagcg ctccgggctg cagtaggaag tggacagagc  
1260

ccctcccg cgcctttccg cggagccctt ggccctcgg acagcccatc tgctgtttct  
1320

## eolf-seql-S000001.txt

ggattcag gggctggggg tgctggatgg acagtgggca tcagcagcag ggttttgggt  
1380

jaccccaat ccaaccggg gacccccaac tcct  
1414

:10> 74  
:11> 3080  
:12> DNA  
:13> Homo sapiens

.00> 74  
:ccctttat ttccactccc caccgcgtg gctttgctct ccctctcccc cctcagctcg  
60

:tgtatttg gagctccgga agctgccggc gactctcccc tggagcagcg tgactgacac  
120

igctcctat tcagctggga ggaggagag gggaggagaa ggggagggcc gcgggaggag  
180

itacgagtg gccgaccacg gatttgcatc gccgaggacg ggaccccagg gcagcgaagc  
240

aatggcca acatgcaggg actggtggaa agactggaac gagctgtcag ccgcctggag  
300

:gctgtctg cagagtccca caggccccct gggaactgcg gggaagtcaa tgggtgtcatt  
360

aggtgtgg caccctccgt ggaagccttt gacaagctga tggacagtat ggtggccgag  
420

tttaaaga acagtaggat ccttgctggg gacgtggaga cccatgcaga aatggtgcac  
480

tgctttcc aggcccagcg ggctttcctt ctgatggcct ctcagtacca acaaccccac  
540

gaatgacg tggccgcact tctgaaacct atatcggaag agattcagga aatccaaact  
600

cagagaga gaaaccgggg gagtaacatg tttaatcatc tttcggccgt cagcgaaagc  
660

ccctgccc ttggatggat agctgtgtct cccaaacctg gtccttatgt caaggagatg  
720

tgacgctg ccacctttta cactaacagg gtcttaaagg actacaaaca cagtgatttg  
780

tcattgtg attgggtgaa gtcatttttg aacatttgga gtgaacttca agcatacatc  
840

eolf-seql-S000001.txt

ggaacacc acaccacggg cctcacatgg agcaaaacag gtccctgtagc atccacagta  
900

agcgtttt ctgtcctctc ctctgggcct ggccttcctc cccccctcc tcctctgcct  
960

tccagggc cacctccact ttctgagaat gaaggcaaaa aagaggaatc ttctccttca  
1020

ctcagctt tatttgccca acttaaccag ggagaagcaa ttacaaaagg gctccgccat  
1080

cacagatg accagaagac atacaaaaat cccagcctgc gggctcaagg agggcaaaact  
1140

atctccca ccaaaagtca cactccaagt cccacatctc ctaaatctta tccttctcaa  
1200

acatgccc cagtgttgga gttggaagga aagaaatgga gagtggagta ccaagaggac  
1260

gaatgacc ttgtgatttc agagactgag ctgaaacaag tggcttacat ttcaaagtgc  
1320

aaaatcaa ctattcagat aaaagggaaa gtaaaactcca ttataattga caactgtaaa  
1380

actcggcc tgggtgtttga caatgtggtg ggcattgtgg aagtgatcaa ctcccaggac  
1440

tcaaattc aggtaatggg gagagtgcc acaatttcca ttaataagac agaagggtgc  
1500

catatacc tcagtgaaga tgcattagac tgtgagatcg tgagcgccaa gtcattctgaa  
1560

gaacatac ttatccctca ggatggtgat tatagagaat ttcccattcc tgaacagttc  
1620

gacagcat gggatggatc caagttaatc actgaacctg cagaaattat ggcctaactt  
1680

gagagac cgaacccccct cacctgaatc cccctctatc aaacaaacaa aaaagcagca  
1740

aaagagct agaagttgca gtagcccta ctgctttagc tttggcctcc aacgattctg  
1800

ctatagat acagcactgt ttctggcacg cctcgtgggc attttgaaat atttaacgtt  
1860

ctcatgat ttgcctttgt gtgtgatttt agttccacat gatgacttgt gaacattagg  
1920

eolf-seq1-S000001.txt

.tttaaagg aaaaaaaaaa agaattctgt tccccctcata tcatgaacac agtaactgat  
1980

igtaaaaag actgcatgat tcactttttac acttatatatt cattgctagt taaaaaataa  
2040

cctttgag aatctaagat gtacattttt accttttagg caatttcaat ataatgtaga  
2100

tagtagtg tgccctgaaa aatgtacacg ttttttctta ttggttaccac atgttcacct  
2160

atcagcgt ggatactgtc agcatgagta catatttcaa cccacgcttg taaaagacat  
2220

gagtttat aaaggaccaa attcagttcc ttggtccttg gaagacctat attctctgta  
2280

tactgaaa accgaaagtc aattctaatt attcatctta catatttttc caccatgtca  
2340

tgaaaact tgcttttctt ctgcataaga gattcttatg ccaaaaacat taaacagaag  
2400

atcatttt ttttgctatg taatacctcg caactttgct ctaaaatcaa gctcagttat  
2460

ttttccaa gtttgaacat gttaaataac agatgccttg taaattatgt ctttaacgtt  
2520

cttataga ctaatttcct cttttccacc tgccagactt gctaaccaag ctcgaaaatg  
2580

catgaaaa agccatacat gtattatttc tcttaaaacc taaggcatta tctgtttggtt  
2640

gcttgctg ctccatatttt gtagtcttga tagtagatgc ttcttcagcg taagagtagc  
2700

tgatatcc ctttttatct tttcagtaca tagtgctgaa aaatctgcaa cttcttggat  
2760

tatttaat gaattatagt ataatgcttg caggcccagt acaagcatat atattgtgcc  
2820

ttacagcc ttggaatac attgtttcca ttttttaaata atcttctata tccatatagt  
2880

tcaaatta ttaatgctca tgtaccaagg ttttgctata aaagttttgt ctgtatgaat  
2940

tgtggctt tagtaaataa tcatttttca actgtaaaact tattctgaaa taaagtaaaa  
3000

ctaattgt ttaaatactg tgatgaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa

eolf-seql-S000001.txt

3060

aaaaaaaa aaaaaaaaaa  
3080

10> 75  
11> 2181  
12> DNA  
13> Homo sapiens

00> 75  
agagccga gctctggagc ctcagcgagc ggaggaggag gcgcagggcc gacggccgag  
60

ctgcggtg agagccagcg ggccagcgcc agcctcaaca gccgccagaa gtacacgagg  
120

ccggcggc ggctgtgtcg ttagggccc tgtgcgggcg gcggcgcggg aggagcgcg  
180

cggcagcc ggctggggcg ggtggcatca tggacgagaa ggtgttcacc aaggagctgg  
240

cagtggat cgagcagctg aacgagtgc agcagctgtc cgagtcccag gtcaagagcc  
300

tgcgagaa ggctaaagaa atcctgacaa aagaatccaa cgtgcaagag gttcgatgtc  
360

gttactgt ctgtggagat gtgcatgggc aatttcatga tctcatggaa ctgtttagaa  
420

ggtggcaa atcaccagat acaaattact tgtttatggg agattatggt gacagaggat  
480

tattcagt tgaaacagtt acactgcttg tagctcttaa ggttcgttac cgtgaacgca  
540

accattct tcgagggaat catgagagca gacagatcac acaagtttat ggtttctatg  
600

gaatgttt aagaaaatat ggaaatgcaa atgtttggaa atattttaca gatctttttg  
660

tatcttcc tctcactgcc ttggtggatg ggcagatctt ctgtctacat ggtgggtctct  
720

ccatctat agatacactg gatcatatca gagcacttga tcgcctacaa gaagttcccc  
780

gagggtcc aatgtgtgac ttgctgtggt cagatccaga tgaccgtggt ggttggggta  
840

ctcctcgc aggagctggt tacacctttg ggcaagatat ttctgagaca tttaatcatg



eolf-seql-S000001.txt

900

caatggcct cacgttggtg tctagagctc accagctagt gatggaggga tataactggt  
960

ccatgaccg gaatgtagta acgattttca gtgctccaaa ctattgttat cgttgtggta  
1020

ccaagctgc aatcatggaa cttgacgata ctctaaaata ctctttcttg cagtttgacc  
1080

agcacctcg tagaggcgag ccacatgtta ctcgctgtac cccagactac ttctgtaat  
1140

aaattttta acttgtacag tattgccatg aaccatatat cgacctaata gaaatgggaa  
1200

agcaacagt aactccaaag tgtcagaaaa tagttaacat tcaaaaaact tgttttcaca  
1260

gacacaaaa gatgtgccat ataaaaatac aaagcctctt gtcacaaaca gccgtgacca  
1320

ttagaatg aaccagttca ttgcatgctg aagcgacatt gttggccaag aaaccagttt  
1380

ggcatagc gctatttgta gttacttttg ctttctctga gagactgcag ataataagat  
1440

aaacatta acacctcgtg aatacaattt aacttccatt tagctatagc tttactcagc  
1500

gactgtag ataaggatag cagcaaaca tcatgggagc ttaatgaaca tttttaaaaa  
1560

attaccaa ggctccctt ctacttgtga gttttgaaat tggtcttttt attttcaggg  
1620

accgttta atttaattat atgatttgc tgcactcagt ttattcccta ctcaaactc  
1680

cccattgt tgttctttgt tattgtcaga acctgggtgag ttgttttgaa cagaactggt  
1740

ttccctt cctgtaagac gatgtgactg cacaagagca ctgcagtgtt tttcataata  
1800

ttgtgaa ctaagaactg agaagggtcaa attttaattg tatcaatggg caagactggt  
1860

gtttatt aaaaaagtta aatcaattga gtaaatttta gaattttag actttaggt  
1920

ataaaaa tcaaggcac tacataacct ctctggtaac tccttgacat tcttcagatt  
1980

eolf-seql-S000001.txt

cttcagga tttatttgta tttcacatat tacaatttgt cacattgttg gtgtgcactt  
2040

rtgggttct tcctgcatat taacttgttt gtaagaaagg aaatctgtgc tgcttcagta  
2100

iacttaatt gtaaaacccat ataacttgag atttaagtct ttgggttggtg ttttaataaa  
2160

agcatggtt ttcaggtaga g  
2181

10> 76

11> 1315

12> DNA

13> Homo sapiens

00> 76

cttcgctc cagaccggaa cccaagatgg ctgcgctggt gctgagacac gttggctcgtc  
60

tgctctcg agcccacttt agccctcagc tctgtatcag aaatgctggt cctttgggaa  
120

acggccaa agaagagatg gagcggttct ggaataagaa tatagggttca aaccgtcctc  
180

tctcccca cattactatc tacagttggt ctcttcccat ggcgatgtcc atctgccacc  
240

ggcactgg tattgctttg agtgcagggg tctctctttt tggcatgtcg gccctgttac  
300

cctgggaa ctttgagtct tatttggaaac ttgtgaagtc cctgtgtctg gggccagcac  
360

atccacac agctaagttt gcacttgtct tcctctcat gtatcatacc tggaatggga  
420

cgacactt gatgtgggac ctaggaaaag gcctgaagat tccccagcta taccagtctg  
480

gtgggttg cctgggttctt actgtgttgt cctctatggg gctggcagcc atgtgaagaa  
540

gaggctcc cagcatcatc ttctacaca ttattacatt cacccatctt tctgtttgtc  
600

tcttatct ccagcctggg aaaagttctc cttatttggt tagatccttt tgtattttca  
660

tctccttg gagcagtaga gtacctggtg gaccataata gtggaaaagg gtctagtttt  
720

eolf-seql-S000001.txt

ccttgttt ctaaagatga ggtggctgca aaaactcccc ttttttgccc acagcttgcc  
780

ctctcggc ctagaagcag ttattctctc tccatattgg gctttgattt gtgctgaggg  
840

agcttttg gctccttctt cctgagacag tggaaacaat gccagctctg tggcttctgc  
900

tggggatg ggccgggttg gggggtgggt tgggtgaagc tttgggttgc cactgcctgt  
960

gtttgctg gcttaaagga caattctctt tcattggtga gagcccaggc cattaacaac  
1020

acacagtg ttattgaaag aagagaggtg ggggtggagg ggaattagtc tgtcccagct  
1080

agggagat aaagagggct agttagttct tggagcagct gcttttgagg agaaaatata  
1140

gctttgga cacgaggaag atctagaaaa ttatcattga acatattaat ggttatttct  
1200

ttcttgga tttccagaaa agcctcttaa ttttatgctt tctcatcgaa gtaatgtacc  
1260

ttttttct gaaactgaat taaatactca ttttaaaaaa aaaaaaaaaa aaaa  
1315

10> 77

11> 1249

12> DNA

13> Homo sapiens

00> 77

cacgagcc agggtttcct cttcaagtag gtctaaaaca ttttttttct cattgacttc  
60

tcctgttc taactgccag tactcagaag tcagagttga gagacagagg caccgccgac  
120

agacgtga agcactgaat aaatagatca gaatgactga aaaagcccca gagccacatg  
180

gaggagga tgacgatgat gagctggaca gcaagctcaa ttataagcct ccaccacaga  
240

tccttgaa agagctgcag gaaatggaca aagatgatga gagtctaatt aagtacaaga  
300

acgctgct gggagatggt cctgtggtga cagatccgaa agcccccaat gtcgttgtca  
360

## eolf-seql-S000001.txt

:cggctcac cctggtttgt gagagtgcc cgggaccaat caccatggac cttactggag  
420  
:ctggaagc cctcaaaaag gaaaccattg tggttaaagga aggttctgaa tatagagtca  
480  
:attcactt caaagtgaac agggatattg tgtcaggcct gaaatacggt cagcacacct  
540  
:aggactgg ggtgaaagtg gataaagcaa catttatggg tggcagctat ggacctcggc  
600  
gaggagta tgagttcctc actccagttg aggaggctcc caagggcatg ctggccccgag  
660  
:acgtacca caacaagtcc ttcttcaccg acgatgacaa gcaagaccac ctcagctggg  
720  
tggaacct gtcgattaag aaggagtggg cagaatgaat gcatccaccc cgttccccac  
780  
ttgccacc tggaagaatt ctctcaggcg tggtcagcac cctgtccctc ctccctgtcc  
840  
agctgggt ccctcttcaa cactgccaca tttccttatt gatcgatctt tccccaccct  
900  
cactcaac gtggtccta gaacaagagg cttaaaaccg ggctttcacc caacctgctc  
960  
tctgatcc tccatcaggg ccagatcttc caggtctcca tctcagtaca caatcattta  
1020  
atttccct gtcttaccce tattcaagca actagaggcc agaaaatggg caaattatca  
1080  
aacaggtc tttgactcag gttccagtag ttcattctaa tgcctagatt cttttgtggt  
1140  
ttgctggc ccaatgagtc cctagtcaca tcccctgcc gagggagttc ttcttttgtg  
1200  
agacactg taaacgacac aagagaacaa gaataaaaca ataactgtg  
1249

10> 78  
11> 1890  
12> DNA  
13> Homo sapiens

00> 78  
cgcgagcg gacgcggcag cgcctctgtc tcgctttttc ttattttttc cccctttccc  
60

## eolf-seql-S000001.txt

tttttttt ttttttttct ttttttttct cccctccccc cctttcacca tttccctcg  
120  
ggcgcttt ccccgggcag gggcagagcc ggtctcaccc cccgcctctc cccggccccc  
180  
cgccctat ggcgagaggg agccccctcc caaccggggc tcgagcggcg gcggcctcag  
240  
cggggggtc atcatggaac taattcgctg accgaccag cggccgcagc cgtgcgtccc  
300  
tcgagcgc cagcgcgccg gcccgcgccc cccgatccgc ttcccccttc tccctcctca  
360  
tgcccgag tcgtcccgcg cgcaccgcct ccgcgcgcct atgagaatga ggtggtaacg  
420  
cccccgga tgaccccgcg tcaccactgt gaggcctaca gctctgccgg ggaggaggag  
480  
ggaggaag aggaggagaa ggtagctaca gcaagctggg tagcaggcag atccaaagga  
540  
tcatgaag tttccagggc ctttggaana ccagagattg ttttctctgt tggaaaaggc  
600  
tactagg gaagcacaga tgtggaaagt gaatgtgcgg aaaatgcctt caaatcagaa  
660  
tttttcca tcccagagag atgaagtaat tcaatggctg gccaaactca agtaccaatt  
720  
acctttac ccagaaacat ttgctctggc tagcagtctt ttggatagggt ttttagctac  
780  
taaaggct catccaaaat acttgagttg tattgcaatc agctgttttt tcctagctgc  
840  
agactgtt gaggaagatg agagaattcc agtactaaag gtattggcaa gagacagttt  
900  
gtggatgt tcctcatctg aaattttgag aatggagaga attattctgg ataagttgaa  
960  
gggatctt cacacagcca caccattgga ttttcttcat attttccatg ccattgcagt  
1020  
caactagg cctcagttac ttttcagttt gcccaaattg agcccatctc aacatttggc  
1080  
tccttacc aagcaactac ttcactgtat ggcttgaac caacttctgc aattcagagg  
1140

eolf-seql-S000001.txt

ccatgctt gctctggcca tggtagtct ggaaatggag aaactcattc ctgattggct  
1200

ctcttaca attgaactgc ttcagaaagc acagatggat agctcccagt tgatccattg  
1260

gggagctt gtggcacatc acctttctac tctgcagtct tccctgcctc tgaattccgt  
1320

atgtctac cgtcccctca agcacaccct ggtgacctgt gacaaaggag tgttcagatt  
1380

atccctcc tctgtcccag gccagactt ctccaaggac aacagcaagc cagaagtgcc  
1440

tcagaggt acagcagcct tttaccatca tctcccagct gccagtgggt gcaagcagac  
1500

ctactaaa cgcaaagtag aggaaatgga agtggatgac ttctatgatg gaatcaaagc  
1560

tctataat gaagataatg tctcagaaaa tgtgggttct gtgtgtggca ctgatttacc  
1620

gacaagag ggacatgctt ccccttgtcc acctttgcag cctgtttctg tcatgtagtt  
1680

aacaagtg ctacctttga gtgtaaacta aggtagacta ctttgggaat gagaacatgc  
1740

aatcagga aaggctgtag aaggaaatat accttaacag gctgatttgg agtgagccag  
1800

aaaaaaaa taaaactctc attatttgtg tggctaatta taattcagcg ttatttaagc  
1860

ataaagac caaaaaaaaa aaaaaaaaaa  
1890

10> 79

11> 1124

12> DNA

13> Homo sapiens

00> 79

cgctgccca ccgcaccccg ccatggagcg gccgtcgctg cgcgccctgc tcctcggcgc  
60

ctgggctg ctgctcctgc tcctgcccct ctctcttcc tcctcttcgg acacctgcgg  
120

cctgcgag ccggcctcct gcccgcccct gccccgctg ggctgcctgc tgggogagac  
180

eolf-seql-S000001.txt

gcgacgcg tgcggctgct gccctatgtg cgcccgcggc gagggcgagc cgtgcggggg  
240

gcggcgcc ggcagggggg actgcgcgcc gggcatggag tgcgtgaaga gccgcaagag  
300

ggaagggg aaagccgggg cagcagccgg cgggccgggt gtaagcggcg tgtgcgtgtg  
360

agagccgc taccgggtgt gcggcagcga cggcaccacc taccgagcg gctgccagct  
420

gcgccgcc agccagaggg ccgagagccg cggggagaag gccatcacc aggtcagcaa  
480

gcacctgc gagcaaggct cttccatagt gacgcccccc aaggacatct ggaatgtcac  
540

gtgcccag gtgtacttga gctgtgaggt catcggaatc ccgacacctg tctcatctg  
600

acaaggta aaaaggggtc actatggagt tcaaaggaca gaactcctgc ctggtgaccg  
660

acaacctg gccattcaga cccgggggtg ccagaaaaag catgaagtaa ctggctgggt  
720

tggatatc cctctaagta aggaagatgc tggagaatat gagtgccatg catccaattc  
780

aaggacag gcttcagcat cagcaaaaat tacagtgggt gatgccttac atgaaatacc  
840

tgaaaaaa ggtgaagggt ccgagctata aacctccaga atattattag tctgcatggt  
900

aaagtagt catggataac tacattacct gttcttgcct aataagtttc ttttaatcca  
960

ccactaac actttagtta tattcactgg ttttacacag agaaatacaa aataaagatc  
1020

acatcaag actatctaca aaaatttatt atatatttac agaagaaaag catgcatatc  
1080

taaacaaa taaaatactt tttatcacaa aaaaaaaaaa aaaa  
1124

10> 80

11> 1867

12> DNA

13> Homo sapiens

10> 80

eolf-seq1-S000001.txt

ttcgctgt ggcgggcgcc tgggccgcc gctgtttaac ttcgcttccg ctggcccata  
60

gatctttg cagtgacca gcagcatcac tgtttcttgg cgtgtgaaga taaccaagg  
120

ttgaggaa gttgctgaga agagtgtgct ggagatgctc taggaaaaaa ttgaatagt  
180

acgagttc cagcgcaagg gtttctgggt tgccaagaag aaagtgaaca tcatggatca  
240

acaacagc ctgccacctt acgctcaggg ctgggcctcc cctcagggtg ccatgactcc  
300

gaatccct atcttttagtc caatgatgcc ttatggcact ggactgaccc cacagcctat  
360

agaacacc aatagtctgt ctattttggga agagcaacaa aggcagcagc agcaacaaca  
420

agcagcag cagcagcagc agcagcagca gcagcagcag cagcagcagc agcagcagca ...  
480

agcagcag cagcagcagc agcagcagca gcaacaggca gtggcagctg cagccgttca  
540

agtcaacg tcccagcagg caacacaggg aacctcaggc caggcaccac agctcttcca  
600

cacagact ctcacaactg cacccttgcc gggcaccact ccactgtatc cctcccccat  
660

ctcccatg acccccatca ctctgccac gccagcttcg gagagtcttg ggattgtacc  
720

agctgcaa aatattgtat ccacagtga tcttggttgt aaacttgacc taaagaccat  
780

cacttcgt gcccgaaacg ccgaatataa tccaagcgg tttgctgcgg taatcatgag  
840

taagagag ccacgaacca cggcactgat tttcagttct gggaaaatgg tgtgcacagg  
900

ccaagagt gaagaacagt ccagactggc agcaagaaaa tatgctagag ttgtacagaa  
960

tgggtttt ccagctaagt tcttggaact caagattcag aatatggtgg ggagctgtga  
1020

tgaagttt cctataaggt tagaaggcct tgtgctcacc caccaacaat ttagtagtta  
1080

agccagag ttatttcctg gtttaatcta cagaatgatc aaaccagaa ttgttctcct



eolf-seql-S000001.txt

1140

tttttgtt tctggaaaag ttgtattaac aggtgctaaa gtcagagcag aaatttatga  
1200

catttgaa aacatctacc ctattctaaa gggattcagg aagacgacgt aatggctctc  
1260

gtaccctt gcctccccc ccccttctt tttttttttt taaacaaatc agtttgtttt  
1320

taccttta aatggtggtg ttgtgagaag atggatgttg agttgcaggg tgtggcacca  
1380

tgatgcc ttctgtaagt gccaccgcg ggatgccggg aaggggcatt atttgtcac  
1440

agaacacc gcgcagcgtg actgtgagtt gtcataccg tgctgctatc tgggcagcgc  
1500

ccatttta tttatatgta gattttaaac actgctgttg acaagttggt ttgagggaga  
1560

actttaag tgttaaagcc acctctataa ttgattggac tttttaattt taatgttttt  
1620

ccatgaac cacagttttt atatttctac cagaaaagta aaaatctttt ttaaaagtgt  
1680

tttttcta atttataact cctaggggtt atttctgtgc cagacacatt ccacctctcc  
1740

tattgcag gacagaatat atgtgttaat gaaaatgaat ggctgtacat atttttttct  
1800

cttcagag tactctgtac aataaatgca gtttataaaa gtgttaaaaa aaaaaaaaaa  
1860

aaaaa  
1867

10&gt; 81

11&gt; 3236

12&gt; DNA

13&gt; Homo sapiens

00&gt; 81

ccgggcgg cgtgggcgtg agaggcgggg cggggccgcg ctctgcttgc caatgtcttt  
60

aggtcacc cggaaggcac gcggaacctc ggcgcggtgc ttccagcagg gtctctccgc  
120

ctccagcc ccgcgcccct cgccgcggcc ctcgggcgte tgcgccgcag ctgccgcccc

eolf-seql-S000001.txt

180

cctcttttg gagtctctcg cggcctcaaa gcgcggcctg cgtcgcttcc ggcagttccc  
240

ccgcgggc gatggctgcc gctgggggcg cccggctgct gcgcgccgct tctgctgtcc  
300

ggcggccc ggccggccgg tggctgcacc acgctgggtc ccgcgctgga tccagcggcc  
360

ctgaggaa ccggggggccg ggcgggagcg cggaggcgag ccggtcgctg agcgtgtcgg  
420

cgggcccc gagcagctca gaagataaaa taacagtcca ctttataaac cgtgatggtg  
480

acattaac aaccaaagga aaagttggtg attctctgct agatggtgtg gttgaaaata  
540

ctagatat tgatggcttt ggtgcatgtg agggaaccct ggcttggttca acctgtcacc  
600

atctttga agatcacata tatgagaagt tagatgcaat cactgatgag gagaatgaca  
660

ctcgatct ggcatatgga ctaacagaca gatcacggtt gggctgccaa atctgtttga  
720

aaatctat ggacaatatg actgttcgag tgcctgaaac agtggctgat gccagacaat  
780

attgatgt gggcaagacc tcctgaacta gaacaaatag gaatattttc atggaatttt  
840

ctattttt ataattatta tttcttaaag tgattaaatg agaacatgga tgagtggact  
900

atattatg actagcttta ctattttaat tcaccttgca taactactga attttgtcat  
960

ttgaaagt atgcaatttt tattttgggt atattacaaa aatgtcaatc aaatattaaa  
1020

atagttaa tgtgatagaa aaaccttaca tatttttttc ttatgtttgt ttagcgactt  
1080

gcaaaatg ttttcatata atctcatctg tttacctaga agataggtta aggaaatata  
1140

attattcc tgtttgatgt ggggtgaaggc agagatctaa cctggcttgt ttagggccat  
1200

actaatt agaaaatctg tgctagaacc tgtgtcttat tcctataagc tatgtgttca  
1260

## eolf-seql-S000001.txt

ictgaaact ggagaaatta tgactatfff atttatagta gtagttaaat ctgaatgtgt  
1320

ggacaaaa atatttaatt gctcagtaaa ctgcttaact tcaaagatag ttattgacct  
1380

taaaataaa tatttcaaaa ttttgattcg gaagactaag tctggacgta gacattataa  
1440

ictatcaaa gaagtttgat ctctgttttg actaaactag aggaaaaatg attggatgtg  
1500

tattcttt tctaagcaga atggtttaac tttgtactct ttgaaaaata atgctgattt  
1560

aaatctct gcctataaca gaatggaaac cttatgaatg aattgtgttt ctctgtcctg  
1620

ictggagaa gggaatgagc aggctgacac gttgcacagc cccagggtggc gccattctct  
1680

cgcaagga tggggctgca gggtgagcag cgtgggctgc agtgtgtcag tcccaggagt  
1740

gggagtgg caagcaccac agattaccac gtatgtgtgg aagacattcg tactcttate  
1800

tactataa ataaattcat aaaagttaac aaaggggtac acagtatggc ctttggaat  
1860

aataaaac atcaactaac ttggactaat tgtgaggaag agcagaacaa attagtagaa  
1920

aggttata agacaattga gttagcttca tgtgtattat tgcagcttga tcatttatat  
1980

atatttgt ctagtacaat gcttgacata cagcattgtg ttatgccccat tggggacaca  
2040

ggtgaaca agacaaggaa tgccatcagg gaattcacct tttattagga aaatataaaa  
2100

tgtatgta tgtgcagata atttgcttga actaaactga ctagttctgc taaataagat  
2160

taactaa ttcatatgta aaaagtgatt aggaagaact tgaagtatca tttgatgctt  
2220

taactatt gagtagtttt tttttttttt ttttggtggg gggagcgggg gacagggctt  
2280

ctctgtca ctcaggccag agtacaatag tatgatctcg gctcactgca acttctgcct  
2340

eolf-seql-S000001.txt

:cagtttca agggattctc gtgcctcagc ctcccaggta gctggtacta caggcacgga  
2400

:accacgcc tggctaattt ttgtattttt tctagggaca gggttttacc acgttgccca  
2460

:ctggtctt gaacttttga gctcgagtga tccaccacc tcagcctccc aaaatgctgg  
2520

ttacagat gtgagccacc gtgcttgGCC ataactattg aatgctttct atgtggagag  
2580

:cttgtctt aattttctgt tgctataata gaataacaca gactgggtaa tttataaaga  
2640

:agagattt atttggatca tggttctgga ggctgggagg tccaagagca tggtagcagc  
2700

:ctgcttgg catctggtga cagctttctt gctgcatcat tacatggtgg aagggaaga  
2760

:atgcgagt gagagcaaga gggcaaatg attatccttt tatcaggagc ccacttctga  
2820

:taactaac ccacacctga gataacggca ttaatccatt catgaggtct ctgctcttaa  
2880

:gagatcac ctcttaaagg acccaccttt caatgccatt aactggcaa ttttaattca  
2940

:atgagttt tggaggggac attcaaacca tagcagtgct ataattttaa agtacttcaa  
3000

:ccaattta ttctcttaat tagcttcatt attcttgtct ttgtgtgtgg attacctaaa  
3060

:ctccttcc agagctactt taatgattat attcaaccaa agcactctaa aatttagagt  
3120

:aaattgtc ttatatttca aattagaaaa gttcaaatga agtttaattg tggtatttta  
3180

:aaaccttc taaaattatt aaatggagga tataatctaa aaaaaaaaaa aaaaaa  
3236

10> 82  
11> 787  
12> DNA  
13> Homo sapiens

00> 82  
actgtgga ggggGgcacg cccggaagcg gcgagggtag ccatgacggc ctccgtgctg  
60

eolf-seql-S000001.txt

aaagtatct cgctagccct gcgcccgcact agcgggcttc tgggaacttg gcagacgcag  
120

tagagaga ctcaccagcg agcgtcattg ttgtctttct gggaaactcat tcccatgaga  
180

agaacctc ttcgaaaaaa gaagaaggta gatacctaaaa aagaccaaga agcaaaggag  
240

cttgaaaa ggaagatccg aaaactggaa aaggctactc aagagctaata tcctattgaa  
300

ttttatta cccctctaaa gttcttggat aaagcaagag agcggcctca ggtggagctc  
360

ctttgagg agactgagag gagagctctg cttctgaaga agtggtcctt gtacaagcag  
420

agagcgta agatggagag ggacaccatc agggctatgc tagaagccca gcaggaagct  
480

ggaggaac tgcaactgga atccccgaag ctccatgctg aggccatcaa gcgggaccc  
540

cctgttcc cctttgagaa ggaagggcca cattacacac caccgatccc taactaccaa  
600

ccctgaag gcaggtacaa tgacatcacc aaggtgtaca cacaagtgga gtttaagaga  
660

gacttgca ggctgctatc cttaacatgc tgcccctgag agtaggaatg accagggctc  
720

gtctgctt tccacagaat caggcatgct gttaataaat actggtttaa tcaaaaaaaaa  
780

aaaaa  
787

10> 83  
11> 912  
12> DNA  
13> Homo sapiens

00> 83  
agggatct gagcagctcc ttctagcatc cttcatcctt cagggtaccag ccatccagac  
60

tgcttgag ctgcagaaac tgagaccaga cctctggcct ggccctcccc aggggcctcc  
120

tcctatag tcaactgcttc tgcatacagat actttcagct gcaactccct actgggtggg  
180

eolf-seql-S000001.txt

acccattt caggcagaag gttttggtac cctccactga ccctacaccc agggctgcta  
240

gccgcttg tggcttcagg atgaaagggt agaccccggt gaacagcact atgagtattg  
300

caagcacg caagatgggt gaacagctta agattgaagc cagcttgtgt cggataaagg  
360

tccaaggc agcagcagac ctgatgactt actgtgatgc ccacgcctgt gaggatcccc  
420

atcacccc tgtgcccact tcggagaacc ctttccggga gaagaagttc ttctgtgctc  
480

ctctgagc tcccctgtcc cttctcacia ctctccctt ttccctctcc tgggcccttc  
540

taggtcag taattgttgt gagcccccta ggctccttgc atcccatccc taacccttgc  
600

gaccatgt gaggttatct gaagcacaag gcccacccctc acctatctgt cgaccccatt  
660

ctaccacc tttgtggcgg accccaagca cccagagat atgaggcacc ctttgctcca  
720

cacagcag ggccccgtca gactctgcca gcgcgtcctg cccgcttccc tcggtgacct  
780

tcagacaa tggagagggg tgggccaggt tcttgctctc agtctcacct ggagctactg  
840

agggtaaa gccatttgaa gaataaagtc atccagagcc ccaaaaaaaaa aaaaaaaaaa  
900

aaaaaaaa aa  
912

10> 84

11> 1700

12> DNA

13> Homo sapiens

00> 84

agccgccc gggccccgc cagcctccct cctcgcgtcc ctggtgtcc tccgcgggcc  
60

cgcgatgc ggctgggccc gaggaccgcg gcgttggggc tgctgctgct gtgcgccgcc  
120

ggccggcg ccggcaaggc cgaggagctg cactaccgc tgggcgagcg ccgcagcgac  
180

eolf-seql-S000001.txt

cgaccgcg aggcgctgct gggcgtccag gaagatgtgg atgaatatgt taaactcggc  
240

cgaagagc agcaaaaaag actgcaggcg atcataaaga aaatcgactt ggactcagat  
300

ctttctca ctgaaagtga actcagttca tggattcaga tgtcttttaa gcattatgct  
360

gcaagaag caaaacaaca gtttgttgaa tatgataaaa acagtgatga tactgtgact  
420

ggatgaat ataacattca gatgtatgat cgtgtgattg actttgatga gaacactgct  
480

ggatgatg cagaagagga gtcctttagg aagcttcact taaaggacaa gaagcgattt  
540

aaaagcta accaggattc aggtcccgtt ttgagtcttg aagaatttat tgcttttgag  
600

tcctgaag aagttgatta tatgacggaa tttgtcattc aagaagcttt agaagaacat  
660

caaaaatg gtgatggatt tgtagtttg gaagaatttc ttggtgatta cagggtggat  
720

aactgcaa atgaagatcc agaatggata cttgttgaga aagacagatt cgtgaatgat  
780

tgacaaag ataacgatgg caggcttgat cccaagagc tgttaccttg ggtagtacct  
840

taatcagg gcattgcaca agaggaggcg cttcatctaa ttgatgaaat ggatttgaat  
900

tgacaaaa agctctctga agaagagatt ctggaaaacc cggacttggt tctcaccagt  
960

agccacag attatggcag acagctccat gatgactatt tctatcatga tgagctttaa  
1020

tccgagcc tgtctcagta gagtactggc tccttttata atttgttacc agctttactt  
1080

gtgataaa atattgatgt tgtattttac actcttaagt ctaaccaca gtcagaatta  
1140

ttaatgta gaattataat tttggctctt ttaggaaaaa acaaaatctg atatttttcc  
1200

acgtattg agcaacaaaa tattaatatt gtgccatatg acaacaaagt ctttcctaaa  
1260

ctccatct gtttagtact gtattgtgga atatttgagt tctatttcca gacttgaaaa

eolf-seql-S000001.txt

1320

ttggaggat tttagagatg cctgaacaat attattttaag tagtatgtga ccgagctata  
1380

tttttttgt ttttgttcta agtagattta atttgggaac tgacaggaca atgttttttag  
1440

tttagcatt ttgttttaaaa accttttaaag aaaccttttag aaggacttag acctcacata  
1500

aatgttga gaagttctgc ttaatttttaa aatggtttct ataaagggtt ttattgtatg  
1560

atagaact ttatattttt gcatatgtat agaggataat tatattttaat gtataactat  
1620

cattatgg tgagtggaat ttgacattgt ccaaaccttt ttcatttttg agtgattaaa  
1680

tgaaatgt cctttgtaaa  
1700...

10&gt; 85

11&gt; 961

12&gt; DNA

13&gt; Homo sapiens

00&gt; 85

gaggcgtg cgaactggtg gcagtgagag acttcggcgg acatggctcc cagcgtgcc  
60

ggcagaac ccgagtatcc taaaggcatc cgggccgtgc tgctggggcc tcccggggcc  
120

taaaggga cccaggcacc cagattggct gaaaacttct gtgtctgcc ttagctact  
180

ggacatgc tgagggccat ggtggcttct ggctcagagc taggaaaaaa gctgaaggca  
240

tatggatg ctgggaaact ggtgagtga gaaatggtag tggagctcat tgagaagaat  
300

ggagaccc ccttgtgcaa aaatggtttt cttctggatg gcttcctcg gactgtgagg  
360

ggcagaaa tgctcgatga cctcatggag aagaggaaag agaagcttga ttctgtgatt  
420

attcagca tcccagactc tctgctgac cgaagaatca caggaaggct gattcacccc  
480

gagtggcc gttcctacca cgaggagttc aaccctccaa aagagcccat gaaagatgac



eolf-seql-S000001.txt

540

caccgggg aacccttgat ccgtcgatca gatgataatg aaaaggcctt gaaaatccgc  
600

gcaagcct accacactca aaccacccca ctcatagagt actacaggaa acgggggatc  
660

ctccgcca tcgatgcac ccagaccccc gatgtcgtgt tcgcaagcat cctagcagcc  
720

ctccaaag ccacatgtaa agacttggtt atgtttatct aatgttgggt ccaagaagga  
780

ttctttcc atccctgtga ggcaatgggt gggaatgata ggacaggcaa agagaagctt  
840

tcaggcta gcaaaaatat catttgatgt attgattaaa aaagcacttg cttgatgtat  
900

ttggcgtg tgtgctactc tcactctgtgt gtatgtgtgt tgtgtgtgtg tgtgtgtgca  
960

961

10&gt; 86

11&gt; 700

12&gt; DNA

13&gt; Homo sapiens

00&gt; 86

ggcgtgag aagccatgag cagcaaagtc tctcgcgaca ccctgtacga ggcggtgcgg  
60

agtcctgc acgggaacca gcgcaagcgc cgcaagttcc tggagacggt ggagttgcag  
120

cagcttga agaactatga tccccagaag gacaagcgct tctcgggcac cgtcaggctt  
180

gtccactc cccgccctaa gttctctgtg tgtgtcctgg gggaccagca gcaactgtgac  
240

ggctaagg ccgtggatat cccccacatg gacatcgagg cgctgaaaaa actcaacaag  
300

taaaaaac tgggtcaagaa gctggccaag aagtatgatg cgtttttggc ctcaagagtct  
360

gatcaagc agattccacg aatcctcggc ccaggtttaa ataaggcagg aaagttccct  
420

cctgctca cacacaacga aaacatggtg gccaaagtgg atgaggtgaa gtccacaatc

eolf-seql-S000001.txt

480

gttcctaaa tgaagaaggt gttatgtctg gctgtagctg ttgggtcacgt gaagatgaca  
540

cgatgagc ttgtgtataa cattcacctg gctgtcaact tcttggtgtc attgctcaag  
600

aaactggc agaatgtccg ggccttatat atcaagagca ccatgggcaa gccccagcgc  
660

atattaag gcacatttga ataaattcta ttaccagttc  
700

10&gt; 87

11&gt; 3750

12&gt; DNA

13&gt; Homo sapiens

00&gt; 87

cggcgcgc gcggccccgc cgagcagggg aagccggtgg ccgcggctgc ggaacggggc  
60

ggctgccg gtttcgtaac cgtcgctcct cctcgctgac tcgcgggctg tgaggcctgg  
120

cggtcggc gccgcaccgc gcggggccgc tcggagtgga ggccgcctgg gggcaggcgg  
180

tagaggag caggtacatg tgaagatttt ttggcagctt agcgtggaaa ccattgatca  
240

ctgctctc atttctacct gttctgtgtt ggcaaggag agtgcccaaa tgagcaagat  
300

cgcagcaa aacagcactc caggggtgaa cggaattagt gttatccata cccaggcaca  
360

ccagcggc ttacagcagg ttctcagct ggtgcctgct ggccctgggg gaggaggcaa  
420

ctgtggct cccagcaagc agagcaaaaa gagttcgccc atggatcgaa acagtgacga  
480

atcggcaa cgccgagaga ggaacaacat ggctgtgaaa aagagccggt tgaaaagcaa  
540

agaaagca caagacacac tgcagagagt caatcagctc aaagaagaga atgaacggtt  
600

aagcaaaa atcaaattgc tgaccaagga attaagtgtc ctcaaagatt tgtttcttga  
660

atgcacac aaccttgcag acaacgtaca gtccattagc actgaaaata cgacagcaga

eolf-seql-S000001.txt

720

igcgacaat gcaggacagt agacctcacc ctttccagac tttagagctt gtggcttgaa  
780

ttaaaggt gtgaccaccg acaccactca tgtcaatggc tgaaagttgt ccatttccat  
840

ctcaaaga cccattggag gctatcttct gggatcagca ctgaagagtt gattagctaa  
900

atgttagc cttgtaattc gaatatctgg ttttaaata tagaggtttt tgtgggaatc  
960

aatcccc aaatgttaag gtatatggta aaaaaagaaa tatctgggat cccgatgttc  
1020

aataaatc ctgacttccc aagaaatgct tcttttttaa gttgacaaaa ggaatgggga  
1080

tggcaggc cgcgcagaag gttcttggtt ttaatggata ggctgaattg gattaagaaa  
1140

ttgaatgc cacctatggt aatctatttg tgattttctt ctaaattatg tattataaat  
1200

gtagagct atagaaagca atgagtgtgt aatttggagt gattttatat atggcataaa  
1260

ttgtttta acataattag tactgttttc cccaaaagt acaagttttt gagtagcaat  
1320

caggttaa gtaaagaaac ttcatcacat cttataggta gtgtgtggcc aattgactta  
1380

aaatacaa ataacattta ggaagcaaat agattaaaca caaaaataaa actaaagcat  
1440

gaattatg tttttgagat acctttgggc ttagattggc attgttttat tctaaaaacc  
1500

actcagtg gtgtagagaa acttgtgtac caaaatttta gtttctgcag atgctagtgt  
1560

ttttggat acaattttga caaccaagtt agtaaacaaa atatcttaac agtttgatga  
1620

caagctac tgatgagggt ttggaatatt aattcagaag gtagtttctc ttgtgttcaa  
1680

tagctgcc atggggctgt tacttttaaa gtcaaaattt tcttctgaag gctcattttg  
1740

atttgatc ttaaccaagt gattattaga gaaatgtatc aactccatgc catctcccaa  
1800

## eolf-seql-S000001.txt

taattgtc taagaaaact tgaaagtgt aggttttaac ctttaattta tttctcttaa  
1860

acatcttt tgatattgtt gttgtgacat ttctttttct ggtagtgagg cttccagac  
1920

tgtaccac tgcttctgtt tattcattta tatgcttttg tgtcccataa attatttcag  
1980

aatgctga taaaactcag gatattgaca tttttgttga gactaaaaaa tggcagtcgc  
2040

aagtaggg actctagagt ctggcttacg tcagtgttgg tagtttagat tgtctttgtc  
2100

cgtttttt cttctctctt ttgctttctt ttctttctct tttttctta gcacagttct  
2160

ctcaaatt tgtgtatttt ttgtgtgcct gggctggaga tgagagactg agtcataact  
2220

tttaaaag tttgtgttat caggatatctt atttgaacat ggtcattttt ggccacattg  
2280

gtttcata ctaggacttg ggatgatgta gccagaataa aactcaagtt gcaccctccg  
2340

tggtggaa gattgctgac cgtgccgttt ctgggcagga gaagacatca tggtgtccag  
2400

actcagca aagccattct taagagtcgt gaggtccttc tgaatgtaaa actggagccc  
2460

gagaagct gtcccaggag ggctgttaac tccctataga gccaggagac aggatagggg  
2520

tctagggt ccaacaccag cttaccttgg agtatgaatc taccatgaa ggatgagaga  
2580

ttttgaaa aactagccag gacacacca caggatccta ctggctcctt agcagctgat  
2640

gtgttaca taattaactt aattggagat gcattaggtc acttgaatgt ataagcaagc  
2700

ctatggta ggcgctacag acatttaa atctttggga ttcatgctc ccatggaatt  
2760

taccagtt atatgaattg acttaagtat cttgaaaaag aaactttaga gaaagcatca  
2820

ggtgtgta ctcatgattt caaatcagaa cacaagattg gaacttttgg aaaaatgggt  
2880

eolf-seql-S000001.txt

aaagctttc ctattagcca tggaaatgca aagtttagca gaagcaagca attaggcaga  
2940

acaaaaat gttaagcatg gtgttgctta tcttattgaa gtggttgga atgaaagctt  
3000

aaatttgat agatttatca gtataaaatt agggaaacca cgtgtgggga atgaatcaat  
3060

agagcttc gggaattgtg aggtgacttt tgtaactttt gttctgtgtg tgacctgtga  
3120

cactagga tgtgatctgc cttgtgggc aggtccagca tagttaggag ttaggcttta  
3180

ataaattt ctagctgcat ctgagtctcc tgggatgggt gctctttggc tggttttggc  
3240

cggatggg gagatcagag cagctcttcc tgctgctggc cctgcaatc agttgttggg  
3300

gccagtgc agatcactaa gtagtaagat tttaatcaaa caccaccagg tccgaaatgc  
3360

gtcatgag tgtgaaattc tcaaatttac ataaaaagta gaagtataga cagtttaaca  
3420

tgggtatta aaggagagga aattgtagca gcttttcacg tttcccagtc cccattagag  
3480

cttgagac cttgtacctg aacaacccat tttgactca gtgctttctg atgccttagg  
3540

aatgtttt tgtttcacaa aagctgggaa ggaagaagtc cattctgcag ctgttagatc  
3600

cctctcag gaaaaagtac taacttgttc ttttgttcc tggctttcat cagtttgtga  
3660

tttctcta ttttttttaa atataatttt atttctttca acaaatataa aataaaaaac  
3720

ctttggaa caatgaaaaa aaaaaaaaaa  
3750

10> 88

11> 1526

12> DNA

13> Homo sapiens

00> 88

atctgcgc aggcgcccgg ctctaagtc taccaggaa ctgacctgc tctctccttt  
60

eolf-seql-S000001.txt

ctgttaga catgggcact ccacagaagg atgttattat caagtcagat gcaccggaca  
120

ttgttatt ggagaaacat gcagattata tcgcatccta tggctcaaag aaagatgatt  
180

gaatactg tatgtctgag tatttgagaa tgagtggcat ctattggggg ctgacagtaa  
240

gatctcat gggacaactt catcgcatga atagagaaga gattctggca tttattaagt  
300

tgccaaca tgaatgtggt ggaataagtg ctagtatcgg acatgatcct catcttttat  
360

actcttag tgctgtccag attcttacgc tgtatgacag tattaatggt attgacgtaa  
420

aaagttgt ggaatatggt aaaggtctac agaaagaaga tggttctttt gctggagata  
480

tggggaga aattgacaca agattctctt tttgtgcggt ggcaactttg gctttgttgg  
540

aagcttga tgctattaat gtggaaaagg caatcgaatt tgttttatcc tgtatgaact  
600

gacggtgg atttggttgc agaccagggt ctgaatccca tgctgggcag atctattgtt  
660

acaggatt tctggctatt acaagtcagt tgcacaaagt aaattctgat ttacttggct  
720

tggctttg tgaacgacaa ttaccctcag gcgggctcaa tggaaggccg gagaagttac  
780

gatgtatg ctactcatgg tgggtcctgg cttccctaaa gataattgga agacttcatt  
840

attgatag agagaaactg cgtaatttca ttttagcatg tcaagatgaa gaaacggggg  
900

tttgcaga caggccagga gatatggtgg atccttttca taccttattt ggaattgctg  
960

ttgtcact tttgggagaa gaacagatta aacctgttaa tcctgtcttt tgcatgcctg  
1020

gaagtgct tcagagagtg aatgttcagc ctgagctagt gagctagatt cattgaattg  
1080

agttgcat agtatagttt tgccatttta acatttctgt atttgaagtg cttatcgaat  
1140

aaaagtga ctactgttaa tattttgtat attgtgttaa attaatTTTA ataaattata

eolf-seql-S000001.txt

1200

aattataca tattgtaaaa taaagaccgg tattttatatt tctgcttttt attctgaagt  
1260

tggttattc tgactacagt tctttgtgta tacttctgtg tctgttatgt tcaataactg  
1320

gctaacata aaataactct aggtttctac ttgatttttc ccccatgtat acctttcatc  
1380

gttctatag caagttgatg taaattgggt tgtcaacaag aatgttaact gatgaaagtg  
1440

atagaacc atacatgaat taaatgatgc acaaaataaa tggctgttga aatttgaaaa  
1500

aaaaaaaa aaaaaaaaaa aaaaaa  
1526

!10> 89  
!11> 2650  
!12> DNA  
!13> Homo sapiens

!00> 89  
cgcgctgg tggcggcggc gcgtcggtgc agttgcgcca tctgtcagga gcggagccgg  
60

aggagggg gctgccgcgg gcgaggagga ggggtcgccg cgagccgaag gccttcgaga  
120

cgcccgcc gcccggcggc gagagtagag gcgaggttgt tgtgcgagcg gcgcgtcctc  
180

ccgcccgg gcgcgccggc cttctcccag cgcaccgagg accgcccggg cgcacacaaa  
240

cgccgccc gcgcgcacc gcccggcggc cgccgcccgc gccagggagg gattcggccg  
300

gggcccgg gacaccccgg cgccgcccc cgggtgctct cggaaggccc accggctccc  
360

gcccgcgg gggaccccc ggagccgcct cggccgcgcc ggaggagggc ggggagagga  
420

atgtgagt gggctccgga gcctcagcgc cgcgcagttt tttgaagaa gcaggatgct  
480

tctaaacg tggaaaaaga ccagtcctgc ctctgttgta gaagacatgt ggtgtatata  
540

gtttgtga tcgttggcgg acattttgga atttagataa tgggctgtgt gcaatgtaag

eolf-seql-S000001.txt

600

taagaag caacaaaact gacggaggag agggacggca gcctgaacca gagctctggg  
660

ccgctatg gcacagaccc caccctcag cactaccca gcttcggtgt gacctccatc  
720

caactaca acaacttcca cgcagccggg ggccaaggac tcaccgtctt tggagggtgtg  
780

ctcttcgt ctcatcggg gaccttgctg acgagaggag gaacaggagt gacactcttt  
840

ggcccttt atgactatga agcacggaca gaagatgacc tgagttttca caaaggagaa  
900

atttcaaa tattgaacag ctcggaagga gattggtggg aagcccgctc cttgacaact  
960

agagacag gttacattcc cagcaattat gtggctccag ttgactctat ccaggcagaa  
1020

gtggtact ttggaaaact tggccgaaaa gatgctgagc gacagctatt gtcctttgga  
1080

ccaagag gtacctttct tatccgcgag agtgaaacca ccaaagggtgc ctattcactt  
1140

tatccgtg attgggatga tatgaaagga gaccatgtca aacattataa aattcgcaaa  
1200

tgacaatg gtggatacta cattaccacc cgggcccagt ttgaaacact tcagcagctt  
1260

acaacatt actcagagag agctgcaggt ctctgctgcc gcctagtagt tcctgtcac  
1320

agggatgc caaggcttac cgatctgtct gtcaaaacca aagatgtctg ggaaatccct  
1380

agaatccc tgcagttgat caagagactg ggaaatgggc agtttgggga agtatggatg  
1440

tacctgga atggaaacac aaaagtagcc ataaagactc ttaaaccagg cacaatgtcc  
1500

cgaatcat tccttgagga agcgcagatc atgaagaagc tgaagcacga caagctggtc  
1560

gctctatg cagtgggtgc tgaggagccc atctacatcg tcaccgagta tatgaacaaa  
1620

aagtttac tggatttctt aaaagatgga gaaggaagag ctctgaaatt accaaatctt  
1680



## eolf-seql-S000001.txt

ggacatgg cagcacaggt ggctgcagga atggcttaca tcgagcgcat gaattatatac  
1740

atagagatc tgcgatcagc aaacattcta gtggggaatg gactcatatg caagattgct  
1800

acttcggat tggcccgatt gatagaagac aatgagtaca cagcaagaca aggtgcaaag  
1860

cccatca agtggacggc ccccgaggca gccctgtacg ggagggttcac aatcaagtct  
1920

cggtgtggc cttttggaat cttactcaca gagctgggtca ccaaaggaag agtgccatac  
1980

aggcatga acaaccggga ggtgctggag cagggtggagc gaggctacag gatgccctgc  
2040

gcaggact gcccacatctc tctgcatgag ctcatgatcc actgctggaa aaaggaccct  
2100

agaacgcc ccacttttga gtacttgcag agcttcctgg aagactactt taccgcgaca  
2160

gccccagt accaacctgg tgaaaacctg taaggcccgg gtctgcggag agaggccttg  
2220

ccagaggc tgccccaccc ctccccatta gctttcaatt ccgtagccag ctgctcccca  
2280

agcggaac cgcccaggat cagattgcat gtgactctga agctgacgaa cttccatggc  
2340

tcattaat gacacttgtc cccaaatccg aacctcctct gtgaagcatt cgagacagaa  
2400

ttgttatt tctcagactt tggaaaatgc attgtatcga tgttatgtaa aaggccaaac  
2460

ctgttcag tgtaaatagt tactccagtg ccaacaatcc tagtgctttc cttttttaaa  
2520

tgcaaatc ctatgtgatt ttaactctgt cttcacctga ttcaactaaa aaaaaaaaaag  
2580

ttattttc caaaagtggc ctctttgtct aaaacaataa aatttttttt catgttttaa  
2640

aaaaccaa  
2650

10> 90  
11> 2073

eolf-seql-S000001.txt

?12&gt; DNA

?13&gt; Homo sapiens

100&gt; 90

aatatagat aatgggctgt gtgcaatgta aggataaaga agcaacaaaa ctgacggagg  
60

jagggacgg cagcctgaac cagagctctg ggtaccgcta tggcacagac cccaccctc  
120

icactacc cagcttcgggt gtgacctcca tccccaaacta caacaacttc cacgcagccg  
180

igccaagg actcacgctc tttggagggtg tgaactcttc gtctcatagc gggaccttgc  
240

acgagagg aggaacagga gtgacactct ttgtggccct ttatgactat gaagcacgga  
300

igaagatga cctgagtttt cacaaaggag aaaaatttca aatattgaac agctcggaag  
360

igattggtg ggaagccgc tccttgacaa ctggagagac aggttacatt cccagcaatt  
420

gtggctcc agttgactct atccaggcag aagagtggta ctttggaata cttggccgaa  
480

gatgctga gcgacagcta ttgtcctttg gaaaccaag aggtacctt cttatccgcg  
540

agtgaac caccaaagggt gcctattcac tttctatccg tgattgggat gatatgaaag  
600

gaccatgt caaacattat aaaattcgca aacttgacaa tgggtggatac tacattacca  
660

cgggccca gtttgaaaca cttcagcagc ttgtacaaca ttactcagag aaagctgatg  
720

ttgtgttt taacttaact gtgattgcat cgagttgtac cccacaaact tctggattgg  
780

aaagatgc ttgggaagtt gcacgtcgtt cgttgtgtct ggagaagaag ctgggtcagg  
840

tgtttcgc tgaagtgtgg cttggtacct ggaatggaaa cacaaaagta gccataaaga  
900

cttaaacc aggcacaatg tccccgaat cattccttga ggaagcgcag atcatgaaga  
960

ctgaagca cgacaagctg gtccagctct atgcagtgggt gtctgaggag cccatctaca  
1020

eolf-seql-S000001.txt

gtcaccga gtatatgaac aaaggaagtt tactggattt cttaaagat ggagaaggaa  
1080

gctctgaa attaccaaatt ctgttggaac tggcagcaca ggtggctgca ggaatggctt  
1140

atcgagcg catgaattat atccatagag atctgcgac agcaaacatt ctagtgggga  
1200

ggactcat atgcaagatt gctgacttcg gattggcccg attgatagaa gacaatgagt  
1260

acagcaag acaaggtgca aagttcccca tcaagtggac ggccccgag gcagccctgt  
1320

gggaggtt cacaatcaag tctgacgtgt ggtcttttgg aatcttactc acagagctgg  
1380

accaaagg aagagtgcc aacccaggca tgaacaaccg ggaggtgctg gagcaggtgg  
1440

cgaggcta caggatgccc tgcccgcagg actgccccat ctctctgcat gagctcatga  
1500

cactgctg gaaaaaggac cctgaagaac gccccacttt tgagtacttg cagagcttcc  
1560

gaagacta ctttaccgcg acagagcccc agtaccaacc tggtgaaaac ctgtaaggcc  
1620

gggtctcg gagagaggcc ttgtcccaga ggctgcccc aacctcccca ttagctttca  
1680

tccgtagc cagctgctcc ccagcagcgg aaccgcccag gatcagattg catgtgactc  
1740

aagctgac gaacttccat ggccctcatt aatgacactt gtccccaaat ccgaacctcc  
1800

tgtgaagc attcgagaca gaaccttggt atttctcaga ctttggaata tgcattgtat  
1860

atgttatg taaaaggcca aacctctggt cagtgtaaat agttactcca gtgccaacaa  
1920

ctagtgtt ttcttttttt aaaaatgcaa atcctatgtg attttaactc tgtcttcacc  
1980

attcaact aaaaaaaaaa aagtattatt ttccaaaagt ggctcttttg tctaaaacaa  
2040

aaattttt ttcatgttt taacaaaaac caa  
2073

eolf-seql-S000001.txt

```
:10> 91
:11> 2000
:12> DNA
:13> Homo sapiens

00> 91
gcgcaggt ctgaggagct gagaaggag gcttacgtga agggaattta gataatgggc
 60

tgtgcaat gtaaggataa agaagcaaca aaactgacgg aggagaggga cggcagcctg
120

ccagagct ctgggtaccg ctatggcaca gacccacccc ctcagcacta cccagcttc
180

tgtgacct ccatcccca ctacaacaac ttccacgcag ccggggggcca aggactcacc
240

ctttggag gtgtgaactc ttcgtctcat acggggacct tgcgtacgag aggaggaaca
300

agtgacac tctttgtggc cctttatgac tatgaagcac ggacagaaga tgacctgagt
360

tcacaaag gagaaaaatt tcaaatattg aacagctcgg aaggagattg gtgggaagcc
420

ctccttga caactggaga gacaggttac attcccagca attatgtggc tccagttgac
480

tatccagg cagaagagtg gtactttgga aaacttggcc gaaaagatgc tgagcgacag
540

attgtcct ttggaaaccc aagaggtacc tttcttatcc gcgagagtga aaccacccaa
600

tgcctatt cactttctat ccgtgattgg gatgatatga aaggagacca tgtcaaacat
660

taaaattc gcaaacttga caatgggtgga tactacatta ccaccggggc ccagtttgaa
720

acttcagc agcttgtaca acattactca ggtacctgga atggaaacac aaaagtagcc
780

aaagactc ttaaaccagg cacaatgtcc cccgaatcat tccttgagga agcgcagatc
840

gaagaagc tgaagcacga caagctggtc cagctctatg cagtgggtgtc tgaggagccc
900

ctacatcg tcaccgagta tatgaacaaa ggaagtttac tggatttctt aaaagatgga
960

aggaagag ctctgaaatt accaaatctt gtggacatgg cagcacaggt ggctgcagga
```

eolf-seql-S000001.txt

1020

ggcttaca tcgagcgcat gaattatata catagagata tgcgatcagc aaacattcta  
1080

ggggaatg gactcatatg caagattgct gacttcggat tggcccgatt gatagaagac  
1140

tgagtaca cagcaagaca aggtgcaaag ttcccatca agtggacggc ccccgaggca  
1200

cctgtacg ggaggttcac aatcaagtct gacgtgtggt cttttggaat cttactcaca  
1260

gctggtca ccaaaggaag agtgccatac ccaggcatga acaaccggga ggtgctggag  
1320

gggtggagc gaggtacag gatgcctgc ccgcaggact gcccacatctc tctgcatgag  
1380

catgatcc actgctggaa aaaggaccct gaagaacgcc ccacttttga gtacttgcag  
1440

cttcctgg aagactactt taccgcgaca gagccccagt accaacctgg tgaaaacctg  
1500

aggcccggt gtctgcggag agaggccttg tcccagaggc tgccccaccc ctccccatta  
1560

tttcaatt ccgtagccag ctgctcecca gcagcggaac cgcccaggat cagattgcat  
1620

gactctga agctgacgaa cttccatggc ctcattaat gacacttgtc cccaaatccg  
1680

cctcctct gtgaagcatt cgagacagaa ccttgttatt tctcagactt tggaaaatgc  
1740

tgtatcga tgttatgtaa aaggccaaac ctctgttcag tgtaaatagt tactccagtg  
1800

aacaatcc tagtgctttc ctttttttaa aatgcaaata ctatgtgatt ttaactctgt  
1860

tcacctga ttcaactaaa aaaaaaaaaag tattattttc caaaagtggc ctctttgtct  
1920

aacaataa aatttttttt catgttttaa caaaaaccaa aaaaaaaaaa aaaaaaaaaa  
1980

aaaaaaaa aaaaaaaaaa  
2000

10&gt; 92

eolf-seql-S000001.txt

:11&gt; 2349

:12&gt; DNA

:13&gt; Homo sapiens

:100&gt; 92

:tcttatcg gttcccatcc cagttgttga tcttatgcaa gacgctgcac gacccccgcg  
60:gcttgctg ccacggcact tgaggcagcc ggagatactc tgagttactc ggagcccgac  
120:ctgagggg gagatgaacg cgctggcctc cctaaccgtc cggacctgtg atcgcttctg  
180:agaccgaa ccggcgctcc tgcccccggg gtgacgcgca gccccagcc gccagacac  
240:ggccccag gccaaagcacc ccatacaggct accccgtgga gggatgccca ccctttcttc  
300:cctgtccc cagtgatggg cctcctcagc cgcgcctgga gccgcctgag gggcctggga  
360:tctagagc cctggctggg ggaagcagta aaaggagcag ctctggtaga agctggcctg  
420:gggagaag ctaggactcc tctggcaatc cccataccc cttggggcag acgccctgga  
480:ggaggctg aagacagtgg aggccctgga gaggacagag aaacactggg gctgaaaacc  
540:cagttccc ttcctgaagc ctggggactt ttggatgatg atgatggcat gtatggtgag  
600:agaggcaa ccagtgtccc tagagggcag ggaagtcaat ttgcagatgg ccagcgtgct  
660:cctgtctc ccagccttct gataaggaca ctgcaagggt ctgataagaa cccaggggag  
720:gaaagccg aggaagaggg agttgctgaa gaggagggag ttaacaagtt ctcttatcca  
780:atcacacc gggagtgttg tccagccgtg gaggaggagg acgatgaaga agctgtaaag  
840:agaagctc acagaacctc tacttctgcc ttgtctccag gatccaagcc cagcacttgg  
900:gtcttgcc caggggagga agagaatcaa gccacggagg ataaaagaac agaaagaagt  
960:aggagcca ggaagacctc cgtgtccccc cgatcttcag gctccgaccc caggctctgg  
1020

## eolf-seql-S000001.txt

agtatcggt caggagagggc gtccgaggag aaggaggaaa aggcacacga agaaactggg  
1080

aggagaag ctgccccagg gccgcaatcc tcagccccag ccagagggcc ccagctcaag  
1140

ctgggtggt gccaaaccag tgatgaagag gagagtgagg tcaagccttt gggggcagct  
1200

gaaggatg gagaagctga gtgtcctccc tgcaccccc caccaagtgc cttcctgaag  
1260

ctgggtgt attggccagg agaggacaca gaggaagagg aagatgagga agaagatgag  
1320

cagtgact ctggatcaga tgaggaagag ggagaagctg aggcttcctc ttccactcct  
1380

tacaggtg tcttcttgaa gtctgggtc tatcagccag gagaggacac agaggaggag  
1440

agatgagg acagtgatac aggatcagcc gaggatgaaa gagaagctga gacttctgct  
1500

cacacccc ctgcaagtgc tttcttgaa gctgggtgt atcggccagg agaggacacg  
1560

ggaggagg aagatgagga tgtggatagt gaggataagg aagatgattc agaagcagcc  
1620

aggagaag ctgagtcaga cccacatccc tcccaccgg accagagtgc ccacttcagg  
1680

ctggggat atcgacctgg aaaagagaca gaggaagagg aagctgctga ggactgggga  
1740

agctgagc cctgcccctt ccgagtggcc atctatgtac ctggagagaa gccaccgcct  
1800

ctgggctc ctctaggct gccctccga ctgcaaaggc ggctcaagcg ccagaaaacc  
1860

tactcatg atccggaccc tgagactccc ctaaaggcca gaaagggtgcg cttctccgag  
1920

ggtcactg tccatttcct ggctgtctgg gcagggccgg ccaggccgc ccgccagggc  
1980

ctgggagc agcttgctcg ggatcgagc cgcttcgcac gccgcatcgc ccaggcccag  
2040

ggagctga gccctgcct caccctgct gccggggcca gagcctgggc acgcctcagg  
2100

eolf-seql-S000001.txt

cccacctt tagcccccatt cctgccctc acccagacct tgccttcctc ctctgtccct  
2160

gtccccag tccagaccac gcccttgagc caagctgtgg ctacaccttc ccgtcctctt  
2220

tgctgcag cggctgccct ggacctcagt gggaggcgtg gctgagacca actggtttgc  
2280

ataattta ttaactatctt attttttcta agtgtgggtt tatataagga ataaagcctt  
2340

gatttgt  
2349

10> 93  
11> 3162  
12> DNA  
13> Homo sapiens

00> 93  
gccctagc cctctttcgg ggatactggc cgacccccctc ttctttttcc ccttttagtga  
60

gcctcccc cgtcgccgcg cggcttcccc gagccgactg cagactccct cagccccgtg  
120

ccccgcgt ccggacgccg aggtcgcggc ttgcagaaa ctcgggcccc tccatccgcc  
180

cagaaaag ggagcgatgt tgatctcagg aagcaciaag ggaccttcct agctctgact  
240

accacgga gctcaccctg gacagtatca ctccgtggag gaagactgtg agactgtggc  
300

gaagccag attgtagcca cacatccgcc cctgccctac ccagagccc tggagcagca  
360

tggctgca gatcacagac acagtgagga tatgagtgtg ggggtgagca ctcagcccc  
420

tttcccca acctcgggca caagcgtggg catgtctacc ttctccatca tggactatgt  
480

tgttcgtc ctgctgctgg ttctctctct tgccattggg ctctaccatg cttgtcgtgg  
540

ggggccgg catactgttg gtgagctgct gatggcggac cgcaaaatgg gctgccttcc  
600

tggcaactg tccctgctgg ccaccttcca gtcagccgtg gccatcctgg gtgtgccgtc  
660



eolf-seql-S000001.txt

agatctac cgatttggga cccaatattg gttcctgggc tgctgctact ttctggggct  
720

tgatacct gcacacatct tcatccccgt tttctaccgc ctgcatctca ccagtgccta  
780

agtacctg gagcttcgat tcaataaaac tgtgcgagtg tgtggaactg tgaccttcac  
840

ttcagatg gtgatctaca tgggagttgt gctctatgct ccgtcattgg ctctcaatgc  
900

tgactggc tttgatctgt ggctgtccgt gctggccctg ggcattgtct gtaccgtcta  
960

cagctctg ggtgggctga aggccgtcat ctggacagat gtgttccaga cactggtcac  
1020

tcctcggg cagctggcag ttatcatcgt ggggtcagcc aagggtgggcg gcttggggcg  
1080

tgtgggcc gtggcttccc agcacggccg catctctggg tttgagctgg atccagaccc  
1140

ttgtgcgg cacaccttct ggaccttggc cttcgggggt gtcttcatga tgctctcctt  
1200

acggggtg aaccaggctc aggtgcagcg gtacctcagt tcccgcacgg agaaggctgc  
1260

tgctctcc tgttatgcag tgttcccctt ccagcagggtg tccctctgcg tgggctgcct  
1320

ttggcctg gtcattgtcg cgtattacca ggagtatccc atgagcattc agcaggctca  
1380

cagcccca gaccagttcg tcctgtactt tgtgatggat ctctgaagg gcctgccagg  
1440

tgccaggg ctcttcattg cctgcctctt cagcggtctc ctacgacta tatcctctgc  
1500

ttaattca ttggcaactg ttacgatgga agacctgatt cgaccttggg tccctgagtt  
1560

ctgaagcc cgggccatca tgctttccag aggccttgcc tttggctatg ggctgctttg  
1620

taggaatg gcctatatatt cctcccagat gggacctgtg ctgcaggcag caatcagcat  
1680

ttggcatg gttgggggac cgctgctggg actcttctgc cttggaatgt tctttccatg  
1740

ctaaccct cctggtgctg ttgtgggcct gttggctggg ctcgatcatgg ccttctggat

eolf-seql-S000001.txt

1800

igcatcggg agcatcgtga ccagcatggg cttcagcatg ccaccctctc cctctaattg  
1860

.ccagcttc tccctgccc ccaatctaac cgttgccact gtgaccacac tgatgccctt  
1920

.ctaccttc tccaagccc cagggctgca gcggttctat tccttgtctt acttatggta  
1980

.gtgctcac aactccacca cagtgattgt ggtgggcctg attgtcagtc tactcactgg  
2040

.gaatgcga ggccgggtccc tgaacctgc aaccatttac ccagtgttg caaagctcct  
2100

ccctcctt ccgttgtcct gtcagaagcg gctccactgc aggagctacg gccaggacca  
2160

tgcacact ggctgtttc ctgagaagcc gaggaatggt gtgctggggg acagcagaga  
2220

aggaggcc atggccctgg atggcacagc ctatcagggg agcagctcca cctgcacctt  
2280

aggagacc tccctgtgat gttgactcag gaccccgct ctgtcctcac tgtgccaggc  
2340

tagccaga ggccacctg tagtacaggg atgagtcttg gtgtgttctg caggacagg  
2400

tggatgat ctagctcata ccaaaggacc ttgttctgag aggttcttg ctgcaggaga  
2460

ctgtcaca tctcaagcat gtgaggcacc gtttttctcg tcgcttgcca atctgttttt  
2520

aaggatca ggctcgtagg gagcaggatc atgccagaaa tagggatgga agtgcacctt  
2580

gggaaaaa gataatggct tctgattcaa catagccata gtcctttgaa gtaagtggct  
2640

aaacagca ctctgggtat aattgcccc gggcctgatt caggactgac tctccaccat  
2700

aactggaa gctgcttccc ctgtagtccc catttcagta ccagttctgc cagccacagt  
2760

gcccttat tattactttc agattgtctg tgacactcaa gccctctca tttttatctg  
2820

tacctcca ttctgaagag ggaggttttg gtgtccctgg tcctctggga atagaagatc  
2880

eolf-seql-S000001.txt

atttgtctt tgtgtagagc aagcacgttt tccacctcac tgtctccatc ctccacctct  
2940

gatggaca cttaagagac ggggcaaattg tggatccaag aaaccagggc catgaccagg  
3000

cactgtgg agcagccatc tatctacctg actcctgagc caggctgccg tgggtgtcatt  
3060

tgtcatcc gtgctctgtt tccttttggg gtttcttctc cacattatct ttgttcctgg  
3120

aatataaaa ctaccattgg acctataaaaa aaaaaaaaaa aa  
3162

!10> 94  
!11> 20  
!12> DNA  
!13> Homo sapiens

!00> 94  
!acatcgct cagacacccat  
20

!10> 95  
!11> 17  
!12> DNA  
!13> Homo sapiens

00> 95  
!caggcgcc caatacg  
17

10> 96  
11> 28  
12> DNA  
13> Homo sapiens

00> 96  
aatccgtt gactccgacc ttcacctt  
28

10> 97  
11> 20  
12> DNA  
13> Homo sapiens

00> 97  
ggccaacc gcgagaagat  
20

eolf-seql-S000001.txt

```
:10> 98
:11> 20
:12> DNA
:13> Homo sapiens
```

```
:00> 98
:caccggag tccatcacga
  20
```

```
:10> 99
:11> 32
:12> DNA
:13> Homo sapiens
```

```
:00> 99
:atgtacgt tgctatccag gctgtgctat cc
  32
```

```
:10> 100
:11> 25
:12> DNA
:13> Homo sapiens
```

```
:00> 100
:actgggac gacatggaga aaatc
  25
```

```
10> 101
11> 22
12> DNA
13> Homo sapiens
```

```
:00> 101
:tggtggg gtgttgaagg tc
  22
```

```
10> 102
11> 21
12> DNA
13> Homo sapiens
```

```
:00> 102
:gaggacaa aataactacc c
  21
```

```
10> 103
11> 22
12> DNA
```

eolf-seql-S000001.txt

:13&gt; Homo sapiens

:00&gt; 103

:attcagga gctttttctt ca  
22

:10&gt; 104

:11&gt; 22

:12&gt; DNA

:13&gt; Homo sapiens

:00&gt; 104

:attcagga gctttttctt ca  
22

:10&gt; 105

:11&gt; 32

:12&gt; DNA

:13&gt; Homo sapiens

:00&gt; 105

:ctgggctg agaaactgat ggactgggct ga  
32

:10&gt; 106

:11&gt; 23

:12&gt; DNA

:13&gt; Homo sapiens

:00&gt; 106

:ggaaaggt cactgaaaaa tct  
23

:10&gt; 107

:11&gt; 21

:12&gt; PRT

:13&gt; Homo sapiens

:00&gt; 107

y Cys Thr Gly Gly Cys Thr Gly Cys Gly Gly Thr Thr Gly Ala Ala  
5 10 15y Thr Thr Gly Gly  
20

:10&gt; 108

:11&gt; 17

:12&gt; DNA

eolf-seql-S000001.txt

13&gt; Homo sapiens

00&gt; 108

cgcggtta cgacctg  
17

10&gt; 109

11&gt; 20

12&gt; DNA

13&gt; Homo sapiens

00&gt; 109

ccactctt ccataacacc  
20

10&gt; 110

11&gt; 32

12&gt; DNA

13&gt; Homo sapiens

00&gt; 110

tccgtttt cacaacagct ttctccatag gt  
32

10&gt; 111

11&gt; 16

12&gt; DNA

13&gt; Homo sapiens

00&gt; 111

aaaacgac ggccag  
16

10&gt; 112

11&gt; 17

12&gt; DNA

13&gt; Homo sapiens

00&gt; 112

ggaaacag ctatgac  
17

10&gt; 113

11&gt; 479

12&gt; PRT

13&gt; Homo sapiens

00&gt; 113

: Asp Glu Thr Ser Pro Leu Val Ser Pro Glu Arg Ala Gln Pro Pro

eolf-seql-S000001.txt

5

10

15

sp Tyr Thr Phe Pro Ser Gly Ser Gly Ala His Phe Pro Gln Val Pro  
           20                          25                          30

y Gly Ala Val Arg Val Ala Ala Ala Ala Gly Ser Gly Pro Ser Pro  
           35                          40                          45

o Gly Ser Pro Gly His Asp Arg Glu Arg Gln Pro Leu Leu Asp Arg  
           50                          55                          60

a Arg Gly Ala Ala Ala Gln Gly Gln Thr Gln Thr Val Ala Ala Gln  
                           70                          75                          80

a Gln Ala Leu Ala Ala Gln Ala Ala Ala Ala Ala His Ala Ala Gln  
                           85                          90                          95

a His Arg Glu Arg Asn Glu Phe Pro Glu Asp Pro Glu Phe Glu Ala  
                           100                          105                          110

l Val Arg Gln Ala Glu Leu Ala Ile Glu Arg Cys Ile Phe Pro Glu  
           115                          120                          125

g Ile Tyr Gln Gly Ser Ser Gly Ser Tyr Phe Val Lys Asp Pro Gln  
           130                          135                          140

y Arg Ile Ile Ala Val Phe Lys Pro Lys Asn Glu Glu Pro Tyr Gly  
           150                          155                          160

s Leu Asn Pro Lys Trp Thr Lys Trp Leu Gln Lys Leu Cys Cys Pro  
                           165                          170                          175

s Cys Phe Gly Arg Asp Cys Leu Val Leu Asn Gln Gly Tyr Leu Ser  
                           180                          185                          190

u Ala Gly Ala Ser Leu Val Asp Gln Lys Leu Glu Leu Asn Ile Val  
           195                          200                          205

o Arg Thr Lys Val Val Tyr Leu Ala Ser Glu Thr Phe Asn Tyr Ser  
           210                          215                          220

eolf-seql-S000001.txt

la Ile Asp Arg Val Lys Ser Arg Gly Lys Arg Leu Ala Leu Glu Lys  
 25 230 235 240

al Pro Lys Val Gly Gln Arg Phe Asn Arg Ile Gly Leu Pro Pro Lys  
 245 250 255

al Gly Ser Phe Gln Leu Phe Val Glu Gly Tyr Lys Asp Ala Asp Tyr  
 260 265 270

p Leu Arg Arg Phe Glu Ala Glu Pro Leu Pro Glu Asn Thr Asn Arg  
 275 280 285

n Leu Leu Leu Gln Phe Glu Arg Leu Val Val Leu Asp Tyr Ile Ile  
 290 295 300

g Asn Thr Asp Arg Gly Asn Asp Asn Trp Leu Ile Lys Tyr Asp Cys  
 310 315 320

o Met Asp Ser Ser Ser Ser Arg Asp Thr Asp Trp Val Val Val Lys  
 325 330 335

u Pro Val Ile Lys Val Ala Ala Ile Asp Asn Gly Leu Ala Phe Pro  
 340 345 350

u Lys His Pro Asp Ser Trp Arg Ala Tyr Pro Phe Tyr Trp Ala Trp  
 355 360 365

u Pro Gln Ala Lys Val Pro Phe Ser Gln Glu Ile Lys Asp Leu Ile  
 370 375 380

u Pro Lys Ile Ser Asp Pro Asn Phe Val Lys Asp Leu Glu Glu Asp  
 390 395 400

u Tyr Glu Leu Phe Lys Lys Asp Pro Gly Phe Asp Arg Gly Gln Phe  
 405 410 415

s Lys Gln Ile Ala Val Met Arg Gly Gln Ile Leu Asn Leu Thr Gln  
 420 425 430

a Leu Lys Asp Asn Lys Ser Pro Leu His Leu Val Gln Met Pro Pro  
 435 440 445



## eolf-seql-S000001.txt

```

al Ile Val Glu Thr Ala Arg Ser His Gln Arg Ser Ser Ser Glu Ser
  450                      455                      460

yr Thr Gln Ser Phe Gln Ser Arg Lys Pro Phe Phe Ser Trp Trp
  55                      470                      475

210> 114
211> 213
212> PRT
213> Homo sapiens

100> 114

et Ala Gln Glu Thr Asn Gln Thr Pro Gly Pro Met Leu Cys Ser Thr
      5                      10                      15

y Cys Gly Phe Tyr Gly Asn Pro Arg Thr Asn Gly Met Cys Ser Val
      20                      25                      30

's Tyr Lys Glu His Leu Gln Arg Gln Gln Asn Ser Gly Arg Met Ser
      35                      40                      45

o Met Gly Thr Ala Ser Gly Ser Asn Ser Pro Thr Ser Asp Ser Ala
  50                      55                      60

r Val Gln Arg Ala Asp Thr Ser Leu Asn Asn Cys Glu Gly Ala Ala
  70                      75                      80

y Ser Thr Ser Glu Lys Ser Arg Asn Val Pro Val Ala Ala Leu Pro
      85                      90                      95

l Thr Gln Gln Met Thr Glu Met Ser Ile Ser Arg Glu Asp Lys Ile
  100                      105                      110

r Thr Pro Lys Thr Glu Val Ser Glu Pro Val Val Thr Gln Pro Ser
  115                      120                      125

o Ser Val Ser Gln Pro Ser Thr Ser Gln Ser Glu Glu Lys Ala Pro
  130                      135                      140

u Leu Pro Lys Pro Lys Lys Asn Arg Cys Phe Met Cys Arg Lys Lys
  5                      150                      155                      160

```

## eolf-seql-S000001.txt

```

al Gly Leu Thr Gly Phe Asp Cys Arg Cys Gly Asn Leu Phe Cys Gly
    165                                170                                175

eu His Arg Tyr Ser Asp Lys His Asn Cys Pro Tyr Asp Tyr Lys Ala
    180                                185                                190

lu Ala Ala Ala Lys Ile Arg Lys Glu Asn Pro Val Val Val Ala Glu
    195                                200                                205

ys Ile Gln Arg Ile
    210

210> 115
211> 323
212> PRT
213> Homo sapiens

100> 115

et Asp Ser Lys Tyr Gln Cys Val Lys Leu Asn Asp Gly His Phe Met
    5                                10                                15

ro Val Leu Gly Phe Gly Thr Tyr Ala Pro Ala Glu Val Pro Lys Ser
    20                                25                                30

's Ala Leu Glu Ala Thr Lys Leu Ala Ile Glu Ala Gly Phe Arg His
    35                                40                                45

.e Asp Ser Ala His Leu Tyr Asn Asn Glu Glu Gln Val Gly Leu Ala
    50                                55                                60

.e Arg Ser Lys Ile Ala Asp Gly Ser Val Lys Arg Glu Asp Ile Phe
    70                                75                                80

r Thr Ser Lys Leu Trp Cys Asn Ser His Arg Pro Glu Leu Val Arg
    85                                90                                95

o Ala Leu Glu Arg Ser Leu Lys Asn Leu Gln Leu Asp Tyr Val Asp
    100                                105                                110

u Tyr Leu Ile His Phe Pro Val Ser Val Lys Pro Gly Glu Glu Val
    115                                120                                125

```

## eolf-seql-S000001.txt

e Pro Lys Asp Glu Asn Gly Lys Ile Leu Phe Asp Thr Val Asp Leu  
 130 135 140

s Ala Thr Trp Glu Ala Val Glu Lys Cys Lys Asp Ala Gly Leu Ala  
 5 150 155 160

s Ser Ile Gly Val Ser Asn Phe Asn Arg Arg Gln Leu Glu Met Ile  
 165 170 175

u Asn Lys Pro Gly Leu Lys Tyr Lys Pro Val Cys Asn Gln Val Glu  
 180 185 190

s His Pro Tyr Phe Asn Gln Arg Lys Leu Leu Asp Phe Cys Lys Ser  
 195 200 205

s Asp Ile Val Leu Val Ala Tyr Ser Ala Leu Gly Ser His Arg Glu ...  
 210 215 220

u Pro Trp Val Asp Pro Asn Ser Pro Val Leu Leu Glu Asp Pro Val  
 5 230 235 240

u Cys Ala Leu Ala Lys Lys His Lys Arg Thr Pro Ala Leu Ile Ala  
 245 250 255

u Arg Tyr Gln Leu Gln Arg Gly Val Val Val Leu Ala Lys Ser Tyr  
 260 265 270

u Glu Gln Arg Ile Arg Gln Asn Val Gln Val Phe Glu Phe Gln Leu  
 275 280 285

r Ser Glu Glu Met Lys Ala Ile Asp Gly Leu Asn Arg Asn Val Arg  
 290 295 300

r Leu Thr Leu Asp Ile Phe Ala Gly Pro Pro Asn Tyr Pro Phe Ser  
 5 310 315 320

o Glu Tyr

.0> 116

.1> 164

eolf-seql-S000001.txt

12&gt; PRT

13&gt; Homo sapiens

00&gt; 116

t Pro Cys Ser Glu Glu Thr Pro Ala Ile Ser Pro Ser Lys Arg Ala  
                   5                  10                  15

g Pro Ala Glu Val Gly Gly Met Gln Leu Arg Phe Ala Arg Leu Ser  
                   20                  25                  30

u His Ala Thr Ala Pro Thr Arg Gly Ser Ala Arg Ala Ala Gly Tyr  
           35                  40                  45

p Leu Tyr Ser Ala Tyr Asp Tyr Thr Ile Pro Pro Met Glu Lys Ala  
       50                  55                  60

l Val Lys Thr Asp Ile Gln Ile Ala Leu Pro Ser Gly Cys Tyr Gly  
                   70                  75                  80

g Val Ala Pro Arg Ser Gly Leu Ala Ala Lys His Phe Ile Asp Val  
                   85                  90                  95

y Ala Gly Val Ile Asp Glu Asp Tyr Arg Gly Asn Val Gly Val Val  
           100                  105                  110

u Phe Asn Phe Gly Lys Glu Lys Phe Glu Val Lys Lys Gly Asp Arg  
           115                  120                  125

e Ala Gln Leu Ile Cys Glu Arg Ile Phe Tyr Pro Glu Ile Glu Glu  
       130                  135                  140

l Gln Ala Leu Asp Asp Thr Glu Arg Gly Ser Gly Gly Phe Gly Ser  
       5                  150                  155                  160

r Gly Lys Asn

10&gt; 117

11&gt; 969

12&gt; PRT

13&gt; Homo sapiens

10&gt; 117

## eolf-seql-S000001.txt

```

t Pro Pro Arg Ala Pro Pro Ala Pro Gly Pro Arg Pro Pro Pro Arg
   5                               10                               15

a Ala Ala Ala Thr Asp Thr Ala Ala Gly Ala Gly Gly Ala Gly Gly
   20                               25                               30

a Gly Gly Ala Gly Gly Pro Gly Phe Arg Pro Leu Ala Pro Arg Pro
   35                               40                               45

p Arg Trp Leu Leu Leu Leu Ala Leu Pro Ala Ala Cys Ser Ala Pro
   50                               55                               60

o Pro Arg Pro Val Tyr Thr Asn His Trp Ala Val Gln Val Leu Gly
   70                               75                               80

y Pro Ala Glu Ala Asp Arg Val Ala Ala Ala His Gly Tyr Leu Asn . . . .
   85                               90                               95

u Gly Gln Ile Gly Asn Leu Glu Asp Tyr Tyr His Phe Tyr His Ser
  100                               105                               110

s Thr Phe Lys Arg Ser Thr Leu Ser Ser Arg Gly Pro His Thr Phe
  115                               120                               125

u Arg Met Asp Pro Gln Val Lys Trp Leu Gln Gln Gln Glu Val Lys
  130                               135                               140

g Arg Val Lys Arg Gln Val Arg Ser Asp Pro Gln Ala Leu Tyr Phe
   5                               150                               155                               160

n Asp Pro Ile Trp Ser Asn Met Trp Tyr Leu His Cys Gly Asp Lys
  165                               170                               175

n Ser Arg Cys Arg Ser Glu Met Asn Val Gln Ala Ala Trp Lys Arg
  180                               185                               190

y Tyr Thr Gly Lys Asn Val Val Val Thr Ile Leu Asp Asp Gly Ile
  195                               200                               205

u Arg Asn His Pro Asp Leu Ala Pro Asn Tyr Asp Ser Tyr Ala Ser
  210                               215                               220

```

## eolf-seql-S000001.txt

```

/r Asp Val Asn Gly Asn Asp Tyr Asp Pro Ser Pro Arg Tyr Asp Ala
25          230          235          240

er Asn Glu Asn Lys His Gly Thr Arg Cys Ala Gly Glu Val Ala Ala
          245          250          255

er Ala Asn Asn Ser Tyr Cys Ile Val Gly Ile Ala Tyr Asn Ala Lys
          260          265          270

e Gly Gly Ile Arg Met Leu Asp Gly Asp Val Thr Asp Val Val Glu
          275          280          285

a Lys Ser Leu Gly Ile Arg Pro Asn Tyr Ile Asp Ile Tyr Ser Ala
          290          295          300

er Trp Gly Pro Asp Asp Asp Gly Lys Thr Val Asp Gly Pro Gly Arg
15          310          315          320

u Ala Lys Gln Ala Phe Glu Tyr Gly Ile Lys Lys Gly Arg Gln Gly
          325          330          335

u Gly Ser Ile Phe Val Trp Ala Ser Gly Asn Gly Gly Arg Glu Gly
          340          345          350

p Tyr Cys Ser Cys Asp Gly Tyr Thr Asn Ser Ile Tyr Thr Ile Ser
          355          360          365

l Ser Ser Ala Thr Glu Asn Gly Tyr Lys Pro Trp Tyr Leu Glu Glu
          370          375          380

s Ala Ser Thr Leu Ala Thr Thr Tyr Ser Ser Gly Ala Phe Tyr Glu
5          390          395          400

g Lys Ile Val Thr Thr Asp Leu Arg Gln Arg Cys Thr Asp Gly His
          405          410          415

r Gly Thr Ser Val Ser Ala Pro Met Val Ala Gly Ile Ile Ala Leu
          420          425          430

a Leu Glu Ala Asn Ser Gln Leu Thr Trp Arg Asp Val Gln His Leu

```

eolf-seql-S000001.txt  
440

435

445

u Val Lys Thr Ser Arg Pro Ala His Leu Lys Ala Ser Asp Trp Lys  
 450 455 460

l Asn Gly Ala Gly His Lys Val Ser His Phe Tyr Gly Phe Gly Leu  
 45 470 475 480

l Asp Ala Glu Ala Leu Val Val Glu Ala Lys Lys Trp Thr Ala Val  
 485 490 495

o Ser Gln His Met Cys Val Ala Ala Ser Asp Lys Arg Pro Arg Ser  
 500 505 510

e Pro Leu Val Gln Val Leu Arg Thr Thr Ala Leu Thr Ser Ala Cys  
 515 520 525

a Glu His Ser Asp Gln Arg Val Val Tyr Leu Glu His Val Val Val  
 530 535 540

g Thr Ser Ile Ser His Pro Arg Arg Gly Asp Leu Gln Ile Tyr Leu  
 5 550 555 560

l Ser Pro Ser Gly Thr Lys Ser Gln Leu Leu Ala Lys Arg Leu Leu  
 565 570 575

p Leu Ser Asn Glu Gly Phe Thr Asn Trp Glu Phe Met Thr Val His  
 580 585 590

s Trp Gly Glu Lys Ala Glu Gly Gln Trp Thr Leu Glu Ile Gln Asp  
 595 600 605

u Pro Ser Gln Val Arg Asn Pro Glu Lys Gln Gly Lys Leu Lys Glu  
 610 615 620

p Ser Leu Ile Leu Tyr Gly Thr Ala Glu His Pro Tyr His Thr Phe  
 5 630 635 640

c Ala His Gln Ser Arg Ser Arg Met Leu Glu Leu Ser Ala Pro Glu  
 645 650 655

eolf-seql-S000001.txt

```

eu Glu Pro Pro Lys Ala Ala Leu Ser Pro Ser Gln Val Glu Val Pro
    660                      665                      670

u Asp Glu Glu Asp Tyr Thr Ala Gln Ser Thr Pro Gly Ser Ala Asn
    675                      680                      685

e Leu Gln Thr Ser Val Cys His Pro Glu Cys Gly Asp Lys Gly Cys
    690                      695                      700

p Gly Pro Asn Ala Asp Gln Cys Leu Asn Cys Val His Phe Ser Leu
15  710                      715                      720

y Ser Val Lys Thr Ser Arg Lys Cys Val Ser Val Cys Pro Leu Gly
    725                      730                      735

r Phe Gly Asp Thr Ala Ala Arg Arg Cys Arg Arg Cys His Lys Gly
    740                      745                      750

s Glu Thr Cys Ser Ser Arg Ala Ala Thr Gln Cys Leu Ser Cys Arg
    755                      760                      765

g Gly Phe Tyr His His Gln Glu Met Asn Thr Cys Val Thr Leu Cys
    770                      775                      780

o Ala Gly Phe Tyr Ala Asp Glu Ser Gln Lys Asn Cys Leu Lys Cys
5   790                      795                      800

s Pro Ser Cys Lys Lys Cys Val Asp Glu Pro Glu Lys Cys Thr Val
    805                      810                      815

s Lys Glu Gly Phe Ser Leu Ala Arg Gly Ser Cys Ile Pro Asp Cys
    820                      825                      830

u Pro Gly Thr Tyr Phe Asp Ser Glu Leu Ile Arg Cys Gly Glu Cys
    835                      840                      845

s His Thr Cys Gly Thr Cys Val Gly Pro Gly Arg Glu Glu Cys Ile
    850                      855                      860

s Cys Ala Lys Asn Phe His Phe His Asp Trp Lys Cys Val Pro Ala
5   870                      875                      880

```



## eolf-seql-S000001.txt

's Gly Glu Gly Phe Tyr Pro Glu Glu Met Pro Gly Leu Pro His Lys  
885 890 895  
l Cys Arg Arg Cys Asp Glu Asn Cys Leu Ser Cys Ala Gly Ser Ser  
900 905 910  
g Asn Cys Ser Arg Cys Lys Thr Gly Phe Thr Gln Leu Gly Thr Ser  
915 920 925  
's Ile Thr Asn His Thr Cys Ser Asn Ala Asp Glu Thr Phe Cys Glu  
930 935 940  
t Val Lys Ser Asn Arg Leu Cys Glu Arg Lys Leu Phe Ile Gln Phe  
5 950 955 960  
's Cys Arg Thr Cys Leu Leu Ala Gly  
965  
10> 118  
11> 683  
12> PRT  
13> Homo sapiens  
00> 118  
t Ala Leu Phe Val Arg Leu Leu Ala Leu Ala Leu Ala Leu Ala Leu  
5 10 15  
y Pro Ala Ala Thr Leu Ala Gly Pro Ala Lys Ser Pro Tyr Gln Leu  
20 25 30  
l Leu Gln His Ser Arg Leu Arg Gly Arg Gln His Gly Pro Asn Val  
35 40 45  
s Ala Val Gln Lys Val Ile Gly Thr Asn Arg Lys Tyr Phe Thr Asn  
50 55 60  
s Lys Gln Trp Tyr Gln Arg Lys Ile Cys Gly Lys Ser Thr Val Ile  
70 75 80  
r Tyr Glu Cys Cys Pro Gly Tyr Glu Lys Val Pro Gly Glu Lys Gly  
85 90 95

## eolf-seql-S000001.txt

```

/s Pro Ala Ala Leu Pro Leu Ser Asn Leu Tyr Glu Thr Leu Gly Val
      100                      105                      110

al Gly Ser Thr Thr Thr Gln Leu Tyr Thr Asp Arg Thr Glu Lys Leu
      115                      120                      125

rg Pro Glu Met Glu Gly Pro Gly Ser Phe Thr Ile Phe Ala Pro Ser
      130                      135                      140

n Glu Ala Trp Ala Ser Leu Pro Ala Glu Val Leu Asp Ser Leu Val
15                      150                      155                      160

r Asn Val Asn Ile Glu Leu Leu Asn Ala Leu Arg Tyr His Met Val
      165                      170                      175

y Arg Arg Val Leu Thr Asp Glu Leu Lys His Gly Met Thr Leu Thr
      180                      185                      190

r Met Tyr Gln Asn Ser Asn Ile Gln Ile His His Tyr Pro Asn Gly
      195                      200                      205

e Val Thr Val Asn Cys Ala Arg Leu Leu Lys Ala Asp His His Ala
      210                      215                      220

r Asn Gly Val Val His Leu Ile Asp Lys Val Ile Ser Thr Ile Thr
5                      230                      235                      240

n Asn Ile Gln Gln Ile Ile Glu Ile Glu Asp Thr Phe Glu Thr Leu
      245                      250                      255

g Ala Ala Val Ala Ala Ser Gly Leu Asn Thr Met Leu Glu Gly Asn
      260                      265                      270

y Gln Tyr Thr Leu Leu Ala Pro Thr Asn Glu Ala Phe Glu Lys Ile
      275                      280                      285

o Ser Glu Thr Leu Asn Arg Ile Leu Gly Asp Pro Glu Ala Leu Arg
      290                      295                      300

p Leu Leu Asn Asn His Ile Leu Lys Ser Ala Met Cys Ala Glu Ala
5                      310                      315                      320

```

## eolf-seql-S000001.txt

le Val Ala Gly Leu Ser Val Glu Thr Leu Glu Gly Thr Thr Leu Glu  
                   325                                  330                                  335

al Gly Cys Ser Gly Asp Met Leu Thr Ile Asn Gly Lys Ala Ile Ile  
                   340                                  345                                  350

er Asn Lys Asp Ile Leu Ala Thr Asn Gly Val Ile His Tyr Ile Asp  
                   355                                  360                                  365

u Leu Leu Ile Pro Asp Ser Ala Lys Thr Leu Phe Glu Leu Ala Ala  
                   370                                  375                                  380

u Ser Asp Val Ser Thr Ala Ile Asp Leu Phe Arg Gln Ala Gly Leu  
 35                                  390                                  395                                  400

y Asn His Leu Ser Gly Ser Glu Arg Leu Thr Leu Leu Ala Pro Leu  
                   405                                  410                                  415

n Ser Val Phe Lys Asp Gly Thr Pro Pro Ile Asp Ala His Thr Arg  
                   420                                  425                                  430

n Leu Leu Arg Asn His Ile Ile Lys Asp Gln Leu Ala Ser Lys Tyr  
                   435                                  440                                  445

u Tyr His Gly Gln Thr Leu Glu Thr Leu Gly Gly Lys Lys Leu Arg  
                   450                                  455                                  460

l Phe Val Tyr Arg Asn Ser Leu Cys Ile Glu Asn Ser Cys Ile Ala  
 45                                  470                                  475                                  480

a His Asp Lys Arg Gly Arg Tyr Gly Thr Leu Phe Thr Met Asp Arg  
                   485                                  490                                  495

l Leu Thr Pro Pro Met Gly Thr Val Met Asp Val Leu Lys Gly Asp  
                   500                                  505                                  510

n Arg Phe Ser Met Leu Val Ala Ala Ile Gln Ser Ala Gly Leu Thr  
                   515                                  520                                  525

u Thr Leu Asn Arg Glu Gly Val Tyr Thr Val Phe Ala Pro Thr Asn

eolf-seql-S000001.txt

530 535 540  
 lu Ala Phe Arg Ala Leu Pro Pro Arg Glu Arg Ser Arg Leu Leu Gly  
 15 550 555 560  
 sp Ala Lys Glu Leu Ala Asn Ile Leu Lys Tyr His Ile Gly Asp Glu  
 565 570 575  
 e Leu Val Ser Gly Gly Ile Gly Ala Leu Val Arg Leu Lys Ser Leu  
 580 585 590  
 n Gly Asp Lys Leu Glu Val Ser Leu Lys Asn Asn Val Val Ser Val  
 595 600 605  
 n Lys Glu Pro Val Ala Glu Pro Asp Ile Met Ala Thr Asn Gly Val  
 610 615 620  
 l His Val Ile Thr Asn Val Leu Gln Pro Pro Ala Asn Arg Pro Gln  
 630 635 640  
 u Arg Gly Asp Glu Leu Ala Asp Ser Ala Leu Glu Ile Phe Lys Gln  
 645 650 655  
 a Ser Ala Phe Ser Arg Ala Ser Gln Arg Ser Val Arg Leu Ala Pro  
 660 665 670  
 l Tyr Gln Lys Leu Leu Glu Arg Met Lys His  
 675 680  
 10> 119  
 11> 381  
 12> PRT  
 13> Homo sapiens  
 00> 119  
 t Glu Ser Gly Ser Thr Ala Ala Ser Glu Glu Ala Arg Ser Leu Arg  
 5 10 15  
 u Cys Glu Leu Tyr Val Gln Lys His Asn Ile Gln Ala Leu Leu Lys  
 20 25 30  
 p Ser Ile Val Gln Leu Cys Thr Ala Arg Pro Glu Arg Pro Met Ala

eolf-seql-S000001.txt

35

40

45

Leu Arg Glu Tyr Phe Glu Arg Leu Glu Lys Glu Glu Ala Lys Gln  
 50 55 60

Gln Asn Leu Gln Lys Ala Gly Thr Arg Thr Asp Ser Arg Glu Asp  
 70 75 80

Ile Ser Pro Pro Pro Asn Pro Val Val Lys Gly Arg Arg Arg  
 85 90 95

Gly Ala Ile Ser Ala Glu Val Tyr Thr Glu Glu Asp Ala Ala Ser  
 100 105 110

Val Arg Lys Val Ile Pro Lys Asp Tyr Lys Thr Met Ala Ala Leu  
 115 120 125

Lys Ala Ile Glu Lys Asn Val Leu Phe Ser His Leu Asp Asp Asn  
 130 135 140

Arg Ser Asp Ile Phe Asp Ala Met Phe Ser Val Ser Phe Ile Ala  
 150 155 160

Glu Thr Val Ile Gln Gln Gly Asp Glu Gly Asp Asn Phe Tyr Val  
 165 170 175

Asp Gln Gly Glu Thr Asp Val Tyr Val Asn Asn Glu Trp Ala Thr  
 180 185 190

Val Gly Glu Gly Gly Ser Phe Gly Glu Leu Ala Leu Ile Tyr Gly  
 195 200 205

Pro Arg Ala Ala Thr Val Lys Ala Lys Thr Asn Val Lys Leu Trp  
 210 215 220

Ile Asp Arg Asp Ser Tyr Arg Arg Ile Leu Met Gly Ser Thr Leu  
 230 235 240

Lys Arg Lys Met Tyr Glu Glu Phe Leu Ser Lys Val Ser Ile Leu  
 245 250 255

eolf-seql-S000001.txt

lu Ser Leu Asp Lys Trp Glu Arg Leu Thr Val Ala Asp Ala Leu Glu  
                   260                                  265                                  270

co Val Gln Phe Glu Asp Gly Gln Lys Ile Val Val Gln Gly Glu Pro  
                   275                                  280                                  285

ly Asp Glu Phe Phe Ile Ile Leu Glu Gly Ser Ala Ala Val Leu Gln  
                   290                                  295                                  300

rg Arg Ser Glu Asn Glu Glu Phe Val Glu Val Gly Arg Leu Gly Pro  
                   310                                  315                                  320

er Asp Tyr Phe Gly Glu Ile Ala Leu Leu Met Asn Arg Pro Arg Ala  
                   325                                  330                                  335

la Thr Val Val Ala Arg Gly Pro Leu Lys Cys Val Lys Leu Asp Arg  
                   340                                  345                                  350

co Arg Phe Glu Arg Val Leu Gly Pro Cys Ser Asp Ile Leu Lys Arg  
                   355                                  360                                  365

in Ile Gln Gln Tyr Asn Ser Phe Val Ser Leu Ser Val  
                   370                                  375                                  380

10> 120

11> 245

12> PRT

13> Homo sapiens

00> 120

t Asn Gly Arg Ala Asp Phe Arg Glu Pro Asn Ala Glu Val Pro Arg  
                   5                                  10                                  15

o Ile Pro His Ile Gly Pro Asp Tyr Ile Pro Thr Glu Glu Glu Arg  
                   20                                  25                                  30

g Val Phe Ala Glu Cys Asn Asp Glu Ser Phe Trp Phe Arg Ser Val  
                   35                                  40                                  45

o Leu Ala Ala Thr Ser Met Leu Ile Thr Gln Gly Leu Ile Ser Lys  
                   50                                  55                                  60

eolf-seql-S000001.txt

y Ile Leu Ser Ser His Pro Lys Tyr Gly Ser Ile Pro Lys Leu Ile  
 5 70 75 80

u Ala Cys Ile Met Gly Tyr Phe Ala Gly Lys Leu Ser Tyr Val Lys  
 85 90 95

r Cys Gln Glu Lys Phe Lys Lys Leu Glu Asn Ser Pro Leu Gly Glu  
 100 105 110

a Leu Arg Ser Gly Gln Ala Arg Arg Ser Ser Pro Pro Gly His Tyr  
 115 120 125

r Gln Lys Ser Lys Tyr Asp Ser Ser Val Ser Gly Gln Ser Ser Phe  
 130 135 140

l Thr Ser Pro Ala Ala Asp Asn Ile Glu Met Leu Pro His Tyr Glu  
 5 150 155 160

o Ile Pro Phe Ser Ser Ser Met Asn Glu Ser Ala Pro Thr Gly Ile  
 165 170 175

r Asp His Ile Val Gln Gly Pro Asp Pro Asn Leu Glu Glu Ser Pro  
 180 185 190

s Arg Lys Asn Ile Thr Tyr Glu Glu Leu Arg Asn Lys Asn Arg Glu  
 195 200 205

r Tyr Glu Val Ser Leu Thr Gln Lys Thr Asp Pro Ser Val Arg Pro  
 210 215 220

t His Glu Arg Val Pro Lys Lys Glu Val Lys Val Asn Lys Tyr Gly  
 5 230 235 240

p Thr Trp Asp Glu  
 245

10> 121

11> 359

12> PRT

13> Homo sapiens

00> 121

## eolf-seql-S000001.txt

at Ser Thr Arg Ala Lys Lys Leu Arg Arg Ile Trp Arg Ile Leu Glu  
                   5                                  10                                  15

lu Glu Glu Ser Val Ala Gly Ala Val Gln Thr Leu Leu Leu Arg Ser  
                   20                                  25                                  30

n Glu Gly Gly Val Thr Ser Ala Ala Ala Ser Thr Leu Ser Glu Pro  
                   35                                  40                                  45

o Arg Arg Thr Gln Glu Ser Arg Thr Arg Thr Arg Ala Leu Gly Leu  
                   50                                  55                                  60

o Thr Leu Pro Met Glu Lys Leu Ala Ala Ser Thr Glu Pro Gln Gly  
                   70                                  75                                  80

o Arg Pro Val Leu Gly Arg Glu Ser Val Gln Val Pro Asp Asp Gln  
                   85                                  90                                  95

p Phe Arg Ser Phe Arg Ser Glu Cys Glu Ala Glu Val Gly Trp Asn  
                   100                                  105                                  110

u Thr Tyr Ser Arg Ala Gly Val Ser Val Trp Val Gln Ala Val Glu  
                   115                                  120                                  125

t Asp Arg Thr Leu His Lys Ile Lys Cys Arg Met Glu Cys Cys Asp  
                   130                                  135                                  140

l Pro Ala Glu Thr Leu Tyr Asp Val Leu His Asp Ile Glu Tyr Arg  
                   145                                  150                                  155                                  160

s Lys Trp Asp Ser Asn Val Ile Glu Thr Phe Asp Ile Ala Arg Leu  
                   165                                  170                                  175

r Val Asn Ala Asp Val Gly Tyr Tyr Ser Trp Arg Cys Pro Lys Pro  
                   180                                  185                                  190

u Lys Asn Arg Asp Val Ile Thr Leu Arg Ser Trp Leu Pro Met Gly  
                   195                                  200                                  205

a Asp Tyr Ile Ile Met Asn Tyr Ser Val Lys His Pro Lys Tyr Pro  
                   210                                  215                                  220



## eolf-seql-S000001.txt

ro Arg Lys Asp Leu Val Arg Ala Val Ser Ile Gln Thr Gly Tyr Leu  
25 230 235 240

le Gln Ser Thr Gly Pro Lys Ser Cys Val Ile Thr Tyr Leu Ala Gln  
245 250 255

al Asp Pro Lys Gly Ser Leu Pro Lys Trp Val Val Asn Lys Ser Ser  
260 265 270

in Phe Leu Ala Pro Lys Ala Met Lys Lys Met Tyr Lys Ala Cys Leu  
275 280 285

rs Tyr Pro Glu Trp Lys Gln Lys His Leu Pro His Phe Lys Pro Trp  
290 295 300

su His Pro Glu Gln Ser Pro Leu Pro Ser Leu Ala Leu Ser Glu Leu  
310 315 320

er Val Gln His Ala Asp Ser Leu Glu Asn Ile Asp Glu Ser Ala Val  
325 330 335

a Glu Ser Arg Glu Glu Arg Met Gly Gly Ala Gly Gly Glu Gly Ser  
340 345 350

p Asp Asp Thr Ser Leu Thr  
355

10> 122

11> 199

12> PRT

13> Homo sapiens

00> 122

t Ser Ser Gly Asn Ala Lys Ile Gly His Pro Ala Pro Asn Phe Lys  
5 10 15

a Thr Ala Val Met Pro Asp Gly Gln Phe Lys Asp Ile Ser Leu Ser  
20 25 30

p Tyr Lys Gly Lys Tyr Val Val Phe Phe Phe Tyr Pro Leu Asp Phe  
35 40 45

## eolf-seql-S000001.txt

r Phe Val Cys Pro Thr Glu Ile Ile Ala Phe Ser Asp Arg Ala Glu  
50 55 60

u Phe Lys Lys Leu Asn Cys Gln Val Ile Gly Ala Ser Val Asp Ser  
70 75 80

s Phe Cys His Leu Ala Trp Val Asn Thr Pro Lys Lys Gln Gly Gly  
85 90 95

u Gly Pro Met Asn Ile Pro Leu Val Ser Asp Pro Lys Arg Thr Ile  
100 105 110

a Gln Asp Tyr Gly Val Leu Lys Ala Asp Glu Gly Ile Ser Phe Arg  
115 120 125

y Leu Phe Ile Ile Asp Asp Lys Gly Ile Leu Arg Gln Ile Thr Val  
130 135 140

n Asp Leu Pro Val Gly Arg Ser Val Asp Glu Thr Leu Arg Leu Val  
5 150 155 160

n Ala Phe Gln Phe Thr Asp Lys His Gly Glu Val Cys Pro Ala Gly  
165 170 175

p Lys Pro Gly Ser Asp Thr Ile Lys Pro Asp Val Gln Lys Ser Lys  
180 185 190

u Tyr Phe Ser Lys Gln Lys  
195

10> 123

11> 219

12> PRT

13> Homo sapiens

00> 123

i Ser Gly Leu Ser Gly Pro Pro Ala Arg Arg Gly Pro Phe Pro Leu  
5 10 15

a Leu Leu Leu Leu Phe Leu Leu Gly Pro Arg Leu Val Leu Ala Ile  
20 25 30

## eolf-seql-S000001.txt

r Phe His Leu Pro Ile Asn Ser Arg Lys Cys Leu Arg Glu Glu Ile  
           35                          40                          45

s Lys Asp Leu Leu Val Thr Gly Ala Tyr Glu Ile Ser Asp Gln Ser  
   50                          55                          60

y Gly Ala Gly Gly Leu Arg Ser His Leu Arg Ile Thr Asp Ser Ala  
                           70                          75                          80

y His Ile Leu Tyr Ser Lys Glu Asp Ala Thr Lys Gly Lys Phe Ala  
                           85                          90                          95

e Thr Thr Glu Asp Tyr Asp Met Phe Glu Val Cys Phe Glu Ser Lys  
                           100                          105                          110

y Thr Gly Arg Ile Pro Asp Gln Leu Val Ile Leu Asp Met Lys His  
   115                          120                          125

y Val Glu Ala Lys Asn Tyr Glu Glu Ile Ala Lys Val Glu Lys Leu  
   130                          135                          140

s Pro Leu Glu Val Glu Leu Arg Arg Leu Glu Asp Leu Ser Glu Ser  
   5                          150                          155                          160

e Val Asn Asp Phe Ala Tyr Met Lys Lys Arg Glu Glu Glu Met Arg  
                           165                          170                          175

o Thr Asn Glu Ser Thr Asn Thr Arg Val Leu Tyr Phe Ser Ile Phe  
                           180                          185                          190

: Met Phe Cys Leu Ile Gly Leu Ala Thr Trp Gln Val Phe Tyr Leu  
                           195                          200                          205

j Arg Phe Phe Lys Ala Lys Lys Leu Ile Glu  
   210                          215

.0> 124

.1> 1575

.2> PRT

.3> Homo sapiens

.0> 124

## eolf-seql-S000001.txt

```

t Pro His Glu Glu Leu Pro Ser Leu Gln Arg Pro Arg Tyr Gly Ser
   5                               10                      15

e Val Asp Asp Glu Arg Leu Ser Ala Glu Glu Met Asp Glu Arg Arg
   20                               25                      30

g Gln Asn Ile Ala Tyr Glu Tyr Leu Cys His Leu Glu Glu Ala Lys
   35                               40                      45

g Trp Met Glu Val Cys Leu Val Glu Glu Leu Pro Pro Thr Thr Glu
   50                               55                      60

u Glu Glu Gly Leu Arg Asn Gly Val Tyr Leu Ala Lys Leu Ala Lys
   70                               75                      80

e Phe Ala Pro Lys Met Val Ser Glu Lys Lys Ile Tyr Asp Val Glu
   85                               90                      95

n Thr Arg Tyr Lys Lys Ser Gly Leu His Phe Arg His Thr Asp Asn
  100                               105                      110

r Val Gln Trp Leu Arg Ala Met Glu Ser Ile Gly Leu Pro Lys Ile
  115                               120                      125

e Tyr Pro Glu Thr Thr Asp Val Tyr Asp Arg Lys Asn Ile Pro Arg
  130                               135                      140

i Ile Tyr Cys Ile His Ala Leu Ser Leu Tyr Leu Phe Lys Leu Gly
  150                               155                      160

e Ala Pro Gln Ile Gln Asp Leu Leu Gly Lys Val Asp Phe Thr Glu
  165                               170                      175

i Glu Ile Ser Asn Met Arg Lys Glu Leu Glu Lys Tyr Gly Ile Gln
  180                               185                      190

i Pro Ser Phe Ser Lys Ile Gly Gly Ile Leu Ala Asn Glu Leu Ser
  195                               200                      205

. Asp Glu Ala Ala Leu His Ala Ala Val Ile Ala Ile Asn Glu Ala
  210                               215                      220

```

## eolf-seql-S000001.txt

al Glu Lys Gly Ile Ala Glu Gln Thr Val Val Thr Leu Arg Asn Pro  
 25 230 235 240  
 sn Ala Val Leu Thr Leu Val Asp Asp Asn Leu Ala Pro Glu Tyr Gln  
 245 250 255  
 ys Glu Leu Trp Asp Ala Lys Lys Lys Lys Glu Glu Asn Ala Arg Leu  
 260 265 270  
 ys Asn Ser Cys Ile Ser Glu Glu Glu Arg Asp Ala Tyr Glu Glu Leu  
 275 280 285  
 eu Thr Gln Ala Glu Ile Gln Gly Asn Ile Asn Lys Val Asn Arg Gln  
 290 295 300  
 la Ala Val Asp His Ile Asn Ala Val Ile Pro Glu Gly Asp Pro Glu  
 305 310 315 320  
 sn Thr Leu Leu Ala Leu Lys Lys Pro Glu Ala Gln Leu Pro Ala Val  
 325 330 335  
 yr Pro Phe Ala Ala Ala Met Tyr Gln Asn Glu Leu Phe Asn Leu Gln  
 340 345 350  
 ys Gln Asn Thr Met Asn Tyr Leu Ala His Glu Glu Leu Leu Ile Ala  
 355 360 365  
 al Glu Met Leu Ser Ala Val Ala Leu Leu Asn Gln Ala Leu Glu Ser  
 370 375 380  
 sn Asp Leu Val Ser Val Gln Asn Gln Leu Arg Ser Pro Ala Ile Gly  
 385 390 395 400  
 eu Asn Asn Leu Asp Lys Ala Tyr Val Glu Arg Tyr Ala Asn Thr Leu  
 405 410 415  
 eu Ser Val Lys Leu Glu Val Leu Ser Gln Gly Gln Asp Asn Leu Ser  
 420 425 430  
 p Asn Glu Ile Gln Asn Cys Ile Asp Met Val Asn Ala Gln Ile Gln

eolf-seql-S000001.txt

435

440

445

lu Glu Asn Asp Arg Val Val Ala Val Gly Tyr Ile Asn Glu Ala Ile  
 450 455 460

sp Glu Gly Asn Pro Leu Arg Thr Leu Glu Thr Leu Leu Leu Pro Thr  
 65 470 475 480

la Asn Ile Ser Asp Val Asp Pro Ala His Ala Gln His Tyr Gln Asp  
 485 490 495

al Leu Tyr His Ala Lys Ser Gln Lys Leu Gly Asp Ser Glu Ser Val  
 500 505 510

er Lys Val Leu Trp Leu Asp Glu Ile Gln Gln Ala Val Asp Glu Ala  
 515 520 525

sn Val Asp Glu Asp Arg Ala Lys Gln Trp Val Thr Leu Val Val Asp  
 530 535 540

al Asn Gln Cys Leu Glu Gly Lys Lys Ser Ser Asp Ile Leu Ser Val  
 45 550 555 560

eu Lys Ser Ser Thr Ser Asn Ala Asn Asp Ile Ile Pro Glu Cys Ala  
 565 570 575

sp Lys Tyr Tyr Asp Ala Leu Val Lys Ala Lys Glu Leu Lys Ser Glu  
 580 585 590

g Val Ser Ser Asp Gly Ser Trp Leu Lys Leu Asn Leu His Lys Lys  
 595 600 605

r Asp Tyr Tyr Tyr Asn Thr Asp Ser Lys Glu Ser Ser Trp Val Thr  
 610 615 620

o Glu Ser Cys Phe Tyr Lys Glu Ser Trp Leu Thr Gly Lys Glu Ile  
 630 635 640

u Asp Ile Ile Glu Glu Val Thr Val Gly Tyr Ile Arg Glu Asn Ile  
 645 650 655

## eolf-seql-S000001.txt

rp Ser Ala Ser Glu Glu Leu Leu Leu Arg Phe Gln Ala Thr Ser Ser  
                   660                                  665                                  670

ly Pro Ile Leu Arg Glu Glu Phe Glu Ala Arg Lys Ser Phe Leu His  
                   675                                  680                                  685

lu Gln Glu Glu Asn Val Val Lys Ile Gln Ala Phe Trp Lys Gly Tyr  
                   690                                  695                                  700

ys Gln Arg Lys Glu Tyr Met His Arg Arg Gln Thr Phe Ile Asp Asn  
 05                                  710                                  715                                  720

ar Asp Ser Val Val Lys Ile Gln Ser Trp Phe Arg Met Ala Thr Ala  
                   725                                  730                                  735

rg Lys Ser Tyr Leu Ser Arg Leu Gln Tyr Phe Arg Asp His Asn Asn  
                   740                                  745                                  750

lu Ile Val Lys Ile Gln Ser Leu Leu Arg Ala Asn Lys Ala Arg Asp  
                   755                                  760                                  765

sp Tyr Lys Thr Leu Val Gly Ser Glu Asn Pro Pro Leu Thr Val Ile  
                   770                                  775                                  780

rg Lys Phe Val Tyr Leu Leu Asp Gln Ser Asp Leu Asp Phe Gln Glu  
 85                                  790                                  795                                  800

lu Leu Glu Val Ala Arg Leu Arg Glu Glu Val Val Thr Lys Ile Arg  
                   805                                  810                                  815

a Asn Gln Gln Leu Glu Lys Asp Leu Asn Leu Met Asp Ile Lys Ile  
                   820                                  825                                  830

y Leu Leu Val Lys Asn Arg Ile Thr Leu Glu Asp Val Ile Ser His  
                   835                                  840                                  845

r Lys Lys Leu Asn Lys Lys Lys Gly Gly Glu Met Glu Ile Leu Asn  
                   850                                  855                                  860

n Thr Asp Asn Gln Gly Ile Lys Ser Leu Ser Lys Glu Arg Arg Lys  
 5                                  870                                  875                                  880

## eolf-seql-S000001.txt

```

r Leu Glu Thr Tyr Gln Gln Leu Phe Tyr Leu Leu Gln Thr Asn Pro
  885                               890                       895

u Tyr Leu Ala Lys Leu Ile Phe Gln Met Pro Gln Asn Lys Ser Thr
  900                               905                       910

s Phe Met Asp Thr Val Ile Phe Thr Leu Tyr Asn Tyr Ala Ser Asn
  915                               920                       925

n Arg Glu Glu Tyr Leu Leu Leu Lys Leu Phe Lys Thr Ala Leu Glu
  930                               935                       940

u Glu Ile Lys Ser Lys Val Asp Gln Val Gln Asp Ile Val Thr Gly
  5                               950                       955                       960

n Pro Thr Val Ile Lys Met Val Val Ser Phe Asn Arg Gly Ala Arg
  965                               970                       975

y Gln Asn Thr Leu Arg Gln Leu Leu Ala Pro Val Val Lys Glu Ile
  980                               985                       990

e Asp Asp Lys Ser Leu Ile Ile Asn Thr Asn Pro Val Glu Val Tyr
  995                               1000                       1005

s Ala Trp Val Asn Gln Leu Glu Thr Gln Thr Gly Glu Ala Ser
  1010                               1015                       1020

s Leu Pro Tyr Asp Val Thr Thr Glu Gln Ala Leu Thr Tyr Pro
  1025                               1030                       1035

i Val Lys Asn Lys Leu Glu Ala Ser Ile Glu Asn Leu Arg Arg
  1040                               1045                       1050

. Thr Asp Lys Val Leu Asn Ser Ile Ile Ser Ser Leu Asp Leu
  1055                               1060                       1065

i Pro Tyr Gly Leu Arg Tyr Ile Ala Lys Val Leu Lys Asn Ser
  1070                               1075                       1080

: His Glu Lys Phe Pro Asp Ala Thr Glu Asp Glu Leu Leu Lys
  1085                               1090                       1095

```



## eolf-seql-S000001.txt

```

le Val Gly Asn Leu Leu Tyr Tyr Arg Tyr Met Asn Pro Ala Ile
  1100                      1105                      1110

al Ala Pro Asp Gly Phe Asp Ile Ile Asp Met Thr Ala Gly Gly
  1115                      1120                      1125

ln Ile Asn Ser Asp Gln Arg Arg Asn Leu Gly Ser Val Ala Lys
  1130                      1135                      1140

al Leu Gln His Ala Ala Ser Asn Lys Leu Phe Glu Gly Glu Asn
  1145                      1150                      1155

lu His Leu Ser Ser Met Asn Asn Tyr Leu Ser Glu Thr Tyr Gln
  1160                      1165                      1170

lu Phe Arg Lys Tyr Phe Lys Glu Ala Cys Asn Val Pro Glu Pro
  1175                      1180                      1185

lu Glu Lys Phe Asn Met Asp Lys Tyr Thr Asp Leu Val Thr Val
  1190                      1195                      1200

er Lys Pro Val Ile Tyr Ile Ser Ile Glu Glu Ile Ile Ser Thr
  1205                      1210                      1215

is Ser Leu Leu Leu Glu His Gln Asp Ala Ile Ala Pro Glu Lys
  1220                      1225                      1230

sn Asp Leu Leu Ser Glu Leu Leu Gly Ser Leu Gly Glu Val Pro
  1235                      1240                      1245

ar Val Glu Ser Phe Leu Gly Glu Gly Ala Val Asp Pro Asn Asp
  1250                      1255                      1260

so Asn Lys Ala Asn Thr Leu Ser Gln Leu Ser Lys Thr Glu Ile
  1265                      1270                      1275

er Leu Val Leu Thr Ser Lys Tyr Asp Ile Glu Asp Gly Glu Ala
  1280                      1285                      1290

e Asp Ser Arg Ser Leu Met Ile Lys Thr Lys Lys Leu Ile Ile

```

## eolf-seql-S000001.txt

```

1295                                1300                                1305

sp Val  Ile Arg Asn Gln Pro  Gly Asn Thr Leu Thr  Glu Ile Leu
1310                                1315                                1320

lu Thr  Pro Ala Thr Ala Gln  Gln Glu Val Asp His  Ala Thr Asp
1325                                1330                                1335

et Val  Ser Arg Ala Met Ile  Asp Ser Arg Thr Pro  Glu Glu Met
1340                                1345                                1350

ys His  Ser Gln Ser Met Ile  Glu Asp Ala Gln Leu  Pro Leu Glu
1355                                1360                                1365

ln Lys  Lys Arg Lys Ile Gln  Arg Asn Leu Arg Thr  Leu Glu Gln
1370                                1375                                1380

ir Gly  His Val Ser Ser Glu  Asn Lys Tyr Gln Asp  Ile Leu Asn
1385                                1390                                1395

u Ile  Ala Lys Asp Ile Arg  Asn Gln Arg Ile Tyr  Arg Lys Leu
1400                                1405                                1410

g Lys  Ala Glu Leu Ala Lys  Leu Gln Gln Thr Leu  Asn Ala Leu
1415                                1420                                1425

n Lys  Lys Ala Ala Phe Tyr  Glu Glu Gln Ile Asn  Tyr Tyr Asp
1430                                1435                                1440

r Tyr  Ile Lys Thr Cys Leu  Asp Asn Leu Lys Arg  Lys Asn Thr
1445                                1450                                1455

g Arg  Ser Ile Lys Leu Asp  Gly Lys Gly Glu Pro  Lys Gly Ala
1460                                1465                                1470

s Arg  Ala Lys Pro Val Lys  Tyr Thr Ala Ala Lys  Leu His Glu
1475                                1480                                1485

s Gly  Val Leu Leu Asp Ile  Asp Asp Leu Gln Thr  Asn Gln Phe
1490                                1495                                1500

```

eolf-seql-S000001.txt

ys Asn Val Thr Phe Asp Ile Ile Ala Thr Glu Asp Val Gly Ile  
 1505 1510 1515

he Asp Val Arg Ser Lys Phe Leu Gly Val Glu Met Glu Lys Val  
 1520 1525 1530

ln Leu Asn Ile Gln Asp Leu Leu Gln Met Gln Tyr Glu Gly Val  
 1535 1540 1545

la Val Met Lys Met Phe Asp Lys Val Lys Val Asn Val Asn Leu  
 1550 1555 1560

eu Ile Tyr Leu Leu Asn Lys Lys Phe Tyr Gly Lys  
 1565 1570 1575

210> 125

211> 212

212> PRT

213> Homo sapiens

400> 125

et Ala Tyr Ala Tyr Leu Phe Lys Tyr Ile Ile Ile Gly Asp Thr Gly  
 5 10 15

al Gly Lys Ser Cys Leu Leu Leu Gln Phe Thr Asp Lys Arg Phe Gln  
 20 25 30

co Val His Asp Leu Thr Ile Gly Val Glu Phe Gly Ala Arg Met Ile  
 35 40 45

ir Ile Asp Gly Lys Gln Ile Lys Leu Gln Ile Trp Asp Thr Ala Gly  
 50 55 60

ln Glu Ser Phe Arg Ser Ile Thr Arg Ser Tyr Tyr Arg Gly Ala Ala  
 70 75 80

y Ala Leu Leu Val Tyr Asp Ile Thr Arg Arg Asp Thr Phe Asn His  
 85 90 95

u Thr Thr Trp Leu Glu Asp Ala Arg Gln His Ser Asn Ser Asn Met  
 100 105 110

eolf-seql-S000001.txt

al Ile Met Leu Ile Gly Asn Lys Ser Asp Leu Glu Ser Arg Arg Glu  
 115 120 125

al Lys Lys Glu Glu Gly Glu Ala Phe Ala Arg Glu His Gly Leu Ile  
 130 135 140

he Met Glu Thr Ser Ala Lys Thr Ala Ser Asn Val Glu Glu Ala Phe  
 145 150 155 160

le Asn Thr Ala Lys Glu Ile Tyr Glu Lys Ile Gln Glu Gly Val Phe  
 165 170 175

sp Ile Asn Asn Glu Ala Asn Gly Ile Lys Ile Gly Pro Gln His Ala  
 180 185 190

la Thr Asn Ala Thr His Ala Gly Asn Gln Gly Gly Gln Gln Ala Gly  
 195 200 205

ly Gly Cys Cys  
 210

?10> 126

?11> 181

?12> PRT

?13> Homo sapiens

100> 126

et Gly Asn Ile Phe Ala Asn Leu Phe Lys Gly Leu Phe Gly Lys Lys  
 5 10 15

u Met Arg Ile Leu Met Val Gly Leu Asp Ala Ala Gly Lys Thr Thr  
 20 25 30

e Leu Tyr Lys Leu Lys Leu Gly Glu Ile Val Thr Thr Ile Pro Thr  
 35 40 45

e Gly Phe Asn Val Glu Thr Val Glu Tyr Lys Asn Ile Ser Phe Thr  
 50 55 60

l Trp Asp Val Gly Gly Gln Asp Lys Ile Arg Pro Leu Trp Arg His  
 70 75 80

eolf-seql-S000001.txt

yr Phe Gln Asn Thr Gln Gly Leu Ile Phe Val Val Asp Ser Asn Asp  
                     85                    90                    95

rg Glu Arg Val Asn Glu Ala Arg Glu Glu Leu Met Arg Met Leu Ala  
                     100                    105                    110

lu Asp Glu Leu Arg Asp Ala Val Leu Leu Val Phe Ala Asn Lys Gln  
                     115                    120                    125

sp Leu Pro Asn Ala Met Asn Ala Ala Glu Ile Thr Asp Lys Leu Gly  
                     130                    135                    140

eu His Ser Leu Arg His Arg Asn Trp Tyr Ile Gln Ala Thr Cys Ala  
   45                    150                    155                    160

rr Ser Gly Asp Gly Leu Tyr Glu Gly Leu Asp Trp Leu Ser Asn Gln  
                     165                    170                    175

eu Arg Asn Gln Lys  
                     180

?10> 127

?11> 732

?12> PRT

?13> Homo sapiens

100> 127

et Pro Glu Glu Thr Gln Thr Gln Asp Gln Pro Met Glu Glu Glu Glu  
                     5                    10                    15

al Glu Thr Phe Ala Phe Gln Ala Glu Ile Ala Gln Leu Met Ser Leu  
                     20                    25                    30

le Ile Asn Thr Phe Tyr Ser Asn Lys Glu Ile Phe Leu Arg Glu Leu  
                     35                    40                    45

le Ser Asn Ser Ser Asp Ala Leu Asp Lys Ile Arg Tyr Glu Thr Leu  
                     50                    55                    60

rr Asp Pro Ser Lys Leu Asp Ser Gly Lys Glu Leu His Ile Asn Leu  
                     70                    75                    80

## eolf-seql-S000001.txt

le Pro Asn Lys Gln Asp Arg Thr Leu Thr Ile Val Asp Thr Gly Ile  
                   85                                  90                                  95

ly Met Thr Lys Ala Asp Leu Ile Asn Asn Leu Gly Thr Ile Ala Lys  
                   100                                  105                                  110

er Gly Thr Lys Ala Phe Met Glu Ala Leu Gln Ala Gly Ala Asp Ile  
                   115                                  120                                  125

er Met Ile Gly Gln Phe Gly Val Gly Phe Tyr Ser Ala Tyr Leu Val  
           130                                  135                                  140

la Glu Lys Val Thr Val Ile Thr Lys His Asn Asp Asp Glu Gln Tyr  
   45                                  150                                  155                                  160

la Trp Glu Ser Ser Ala Gly Gly Ser Phe Thr Val Arg Thr Asp Thr  
                   165                                  170                                  175

ly Glu Pro Met Gly Arg Gly Thr Lys Val Ile Leu His Leu Lys Glu  
                   180                                  185                                  190

sp Gln Thr Glu Tyr Leu Glu Glu Arg Arg Ile Lys Glu Ile Val Lys  
           195                                  200                                  205

ys His Ser Gln Phe Ile Gly Tyr Pro Ile Thr Leu Phe Val Glu Lys  
           210                                  215                                  220

lu Arg Asp Lys Glu Val Ser Asp Asp Glu Ala Glu Glu Lys Glu Asp  
   25                                  230                                  235                                  240

ys Glu Glu Glu Lys Glu Lys Glu Glu Lys Glu Ser Glu Asp Lys Pro  
                   245                                  250                                  255

lu Ile Glu Asp Val Gly Ser Asp Glu Glu Glu Glu Lys Lys Asp Gly  
                   260                                  265                                  270

sp Lys Lys Lys Lys Lys Lys Ile Lys Glu Lys Tyr Ile Asp Gln Glu  
           275                                  280                                  285

lu Leu Asn Lys Thr Lys Pro Ile Trp Thr Arg Asn Pro Asp Asp Ile  
   290                                  295                                  300

## eolf-seql-S000001.txt

```

hr Asn Glu Glu Tyr Gly Glu Phe Tyr Lys Ser Leu Thr Asn Asp Trp
05          310          315          320

lu Asp His Leu Ala Val Lys His Phe Ser Val Glu Gly Gln Leu Glu
          325          330          335

he Arg Ala Leu Leu Phe Val Pro Arg Arg Ala Pro Phe Asp Leu Phe
          340          345          350

lu Asn Arg Lys Lys Lys Asn Asn Ile Lys Leu Tyr Val Arg Arg Val
          355          360          365

he Ile Met Asp Asn Cys Glu Glu Leu Ile Pro Glu Tyr Leu Asn Phe
          370          375          380

le Arg Gly Val Val Asp Ser Glu Asp Leu Pro Leu Asn Ile Ser Arg
35          390          395          400

lu Met Leu Gln Gln Ser Lys Ile Leu Lys Val Ile Arg Lys Asn Leu
          405          410          415

al Lys Lys Cys Leu Glu Leu Phe Thr Glu Leu Ala Glu Asp Lys Glu
          420          425          430

sn Tyr Lys Lys Phe Tyr Glu Gln Phe Ser Lys Asn Ile Lys Leu Gly
          435          440          445

le His Glu Asp Ser Gln Asn Arg Lys Lys Leu Ser Glu Leu Leu Arg
          450          455          460

r Tyr Thr Ser Ala Ser Gly Asp Glu Met Val Ser Leu Lys Asp Tyr
5          470          475          480

's Thr Arg Met Lys Glu Asn Gln Lys His Ile Tyr Tyr Ile Thr Gly
          485          490          495

u Thr Lys Asp Gln Val Ala Asn Ser Ala Phe Val Glu Arg Leu Arg
          500          505          510

's His Gly Leu Glu Val Ile Tyr Met Ile Glu Pro Ile Asp Glu Tyr
          515          520          525

```

## eolf-seql-S000001.txt

ys Val Gln Gln Leu Lys Glu Phe Glu Gly Lys Thr Leu Val Ser Val  
530 535 540

ar Lys Glu Gly Leu Glu Leu Pro Glu Asp Glu Glu Glu Lys Lys Lys  
45 550 555 560

ln Glu Glu Lys Lys Thr Lys Phe Glu Asn Leu Cys Lys Ile Met Lys  
565 570 575

sp Ile Leu Glu Lys Lys Val Glu Lys Val Val Val Ser Asn Arg Leu  
580 585 590

al Thr Ser Pro Cys Cys Ile Val Thr Ser Thr Tyr Gly Trp Thr Ala  
595 600 605

sn Met Glu Arg Ile Met Lys Ala Gln Ala Leu Arg Asp Asn Ser Thr  
610 615 620

st Gly Tyr Met Ala Ala Lys Lys His Leu Glu Ile Asn Pro Asp His  
625 630 635 640

er Ile Ile Glu Thr Leu Arg Gln Lys Ala Glu Ala Asp Lys Asn Asp  
645 650 655

rs Ser Val Lys Asp Leu Val Ile Leu Leu Tyr Glu Thr Ala Leu Leu  
660 665 670

er Ser Gly Phe Ser Leu Glu Asp Pro Gln Thr His Ala Asn Arg Ile  
675 680 685

er Arg Met Ile Lys Leu Gly Leu Gly Ile Asp Glu Asp Asp Pro Thr  
690 695 700

a Asp Asp Thr Ser Ala Ala Val Thr Glu Glu Met Pro Pro Leu Glu  
705 710 715 720

y Asp Asp Asp Thr Ser Arg Met Glu Glu Val Asp  
725 730

10&gt; 128



## eolf-seql-S000001.txt

211> 858  
 212> PRT  
 213> Homo sapiens  
  
 400> 128  
  
 et Gly Asp His Leu Asp Leu Leu Leu Gly Val Val Leu Met Ala Gly  
                   5                  10                  15  
  
 ro Val Phe Gly Ile Pro Ser Cys Ser Phe Asp Gly Arg Ile Ala Phe  
                   20                  25                  30  
  
 yr Arg Phe Cys Asn Leu Thr Gln Val Pro Gln Val Leu Asn Thr Thr  
           35                  40                  45  
  
 lu Arg Leu Leu Leu Ser Phe Asn Tyr Ile Arg Thr Val Thr Ala Ser  
       50                  55                  60  
  
 er Phe Pro Phe Leu Glu Gln Leu Gln Leu Leu Glu Leu Gly Ser Gln  
   5                  70                  75                  80  
  
 yr Thr Pro Leu Thr Ile Asp Lys Glu Ala Phe Arg Asn Leu Pro Asn  
           85                  90                  95  
  
 eu Arg Ile Leu Asp Leu Gly Ser Ser Lys Ile Tyr Phe Leu His Pro  
           100                  105                  110  
  
 sp Ala Phe Gln Gly Leu Phe His Leu Phe Glu Leu Arg Leu Tyr Phe  
       115                  120                  125  
  
 /s Gly Leu Ser Asp Ala Val Leu Lys Asp Gly Tyr Phe Arg Asn Leu  
   130                  135                  140  
  
 /s Ala Leu Thr Arg Leu Asp Leu Ser Lys Asn Gln Ile Arg Ser Leu  
   15                  150                  155                  160  
  
 /r Leu His Pro Ser Phe Gly Lys Leu Asn Ser Leu Lys Ser Ile Asp  
           165                  170                  175  
  
 ie Ser Ser Asn Gln Ile Phe Leu Val Cys Glu His Glu Leu Glu Pro  
       180                  185                  190  
  
 /u Gln Gly Lys Thr Leu Ser Phe Phe Ser Leu Ala Ala Asn Ser Leu

eolf-seql-S000001.txt

195

200

205

```

yr Ser Arg Val Ser Val Asp Trp Gly Lys Cys Met Asn Pro Phe Arg
  210                215                220

sn Met Val Leu Glu Ile Leu Asp Val Ser Gly Asn Gly Trp Thr Val
  25                230                235                240

sp Ile Thr Gly Asn Phe Ser Asn Ala Ile Ser Lys Ser Gln Ala Phe
                245                250                255

er Leu Ile Leu Ala His His Ile Met Gly Ala Gly Phe Gly Phe His
                260                265                270

sn Ile Lys Asp Pro Asp Gln Asn Thr Phe Ala Gly Leu Ala Arg Ser
                275                280                285

er Val Arg His Leu Asp Leu Ser His Gly Phe Val Phe Ser Leu Asn
  290                295                300

er Arg Val Phe Glu Thr Leu Lys Asp Leu Lys Val Leu Asn Leu Ala
  305                310                315                320

yr Asn Lys Ile Asn Lys Ile Ala Asp Glu Ala Phe Tyr Gly Leu Asp
                325                330                335

sn Leu Gln Val Leu Asn Leu Ser Tyr Asn Leu Leu Gly Glu Leu Tyr
                340                345                350

er Ser Asn Phe Tyr Gly Leu Pro Lys Val Ala Tyr Ile Asp Leu Gln
                355                360                365

's Asn His Ile Ala Ile Ile Gln Asp Gln Thr Phe Lys Phe Leu Glu
  370                375                380

's Leu Gln Thr Leu Asp Leu Arg Asp Asn Ala Leu Thr Thr Ile His
  385                390                395                400

ie Ile Pro Ser Ile Pro Asp Ile Phe Leu Ser Gly Asn Lys Leu Val
                405                410                415

```

## eolf-seql-S000001.txt

```

hr Leu Pro Lys Ile Asn Leu Thr Ala Asn Leu Ile His Leu Ser Glu
    420                                425                                430

sn Arg Leu Glu Asn Leu Asp Ile Leu Tyr Phe Leu Leu Arg Val Pro
    435                                440                                445

is Leu Gln Ile Leu Ile Leu Asn Gln Asn Arg Phe Ser Ser Cys Ser
    450                                455                                460

ly Asp Gln Thr Pro Ser Glu Asn Pro Ser Leu Glu Gln Leu Phe Leu
    465                                470                                475                                480

ly Glu Asn Met Leu Gln Leu Ala Trp Glu Thr Glu Leu Cys Trp Asp
    485                                490                                495

al Phe Glu Gly Leu Ser His Leu Gln Val Leu Tyr Leu Asn His Asn
    500                                505                                510

/r Leu Asn Ser Leu Pro Pro Gly Val Phe Ser His Leu Thr Ala Leu
    515                                520                                525

cg Gly Leu Ser Leu Asn Ser Asn Arg Leu Thr Val Leu Ser His Asn
    530                                535                                540

sp Leu Pro Ala Asn Leu Glu Ile Leu Asp Ile Ser Arg Asn Gln Leu
    545                                550                                555                                560

eu Ala Pro Asn Pro Asp Val Phe Val Ser Leu Ser Val Leu Asp Ile
    565                                570                                575

ir His Asn Lys Phe Ile Cys Glu Cys Glu Leu Ser Thr Phe Ile Asn
    580                                585                                590

p Leu Asn His Thr Asn Val Thr Ile Ala Gly Pro Pro Ala Asp Ile
    595                                600                                605

r Cys Val Tyr Pro Asp Ser Phe Ser Gly Val Ser Leu Phe Ser Leu
    610                                615                                620

r Thr Glu Gly Cys Asp Glu Glu Glu Val Leu Lys Ser Leu Lys Phe
    625                                630                                635                                640

```

## eolf-seql-S000001.txt

er Leu Phe Ile Val Cys Thr Val Thr Leu Thr Leu Phe Leu Met Thr  
 645 650 655  
 le Leu Thr Val Thr Lys Phe Arg Gly Phe Cys Phe Ile Cys Tyr Lys  
 660 665 670  
 hr Ala Gln Arg Leu Val Phe Lys Asp His Pro Gln Gly Thr Glu Pro  
 675 680 685  
 sp Met Tyr Lys Tyr Asp Ala Tyr Leu Cys Phe Ser Ser Lys Asp Phe  
 690 695 700  
 ar Trp Val Gln Asn Ala Leu Leu Lys His Leu Asp Thr Gln Tyr Ser  
 705 710 715 720  
 sp Gln Asn Arg Phe Asn Leu Cys Phe Glu Glu Arg Asp Phe Val Pro  
 725 730 735  
 ly Glu Asn Arg Ile Ala Asn Ile Gln Asp Ala Ile Trp Asn Ser Arg  
 740 745 750  
 ys Ile Val Cys Leu Val Ser Arg His Phe Leu Arg Asp Gly Trp Cys  
 755 760 765  
 eu Glu Ala Phe Ser Tyr Ala Gln Gly Arg Cys Leu Ser Asp Leu Asn  
 770 775 780  
 er Ala Leu Ile Met Val Val Val Gly Ser Leu Ser Gln Tyr Gln Leu  
 785 790 795 800  
 et Lys His Gln Ser Ile Arg Gly Phe Val Gln Lys Gln Gln Tyr Leu  
 805 810 815  
 g Trp Pro Glu Asp Leu Gln Asp Val Gly Trp Phe Leu His Lys Leu  
 820 825 830  
 er Gln Gln Ile Leu Lys Lys Glu Lys Glu Lys Lys Lys Asp Asn Asn  
 835 840 845  
 e Pro Leu Gln Thr Val Ala Thr Ile Ser  
 850 855

## eolf-seql-S000001.txt

```

210> 129
211> 466
212> PRT
213> Homo sapiens

400> 129

at Val Met Glu Lys Pro Ser Pro Leu Leu Val Gly Arg Glu Phe Val
      5                      10                      15

cg Gln Tyr Tyr Thr Leu Leu Asn Gln Ala Pro Asp Met Leu His Arg
      20                      25                      30

ne Tyr Gly Lys Asn Ser Ser Tyr Val His Gly Gly Leu Asp Ser Asn
      35                      40                      45

ly Lys Pro Ala Asp Ala Val Tyr Gly Gln Lys Glu Ile His Arg Lys
      50                      55                      60

al Met Ser Gln Asn Phe Thr Asn Cys His Thr Lys Ile Arg His Val
      65                      70                      75                      80

sp Ala His Ala Thr Leu Asn Asp Gly Val Val Val Gln Val Met Gly
      85                      90                      95

eu Leu Ser Asn Asn Asn Gln Ala Leu Arg Arg Phe Met Gln Thr Phe
      100                     105                     110

al Leu Ala Pro Glu Gly Ser Val Ala Asn Lys Phe Tyr Val His Asn
      115                     120                     125

sp Ile Phe Arg Tyr Gln Asp Glu Val Phe Gly Gly Phe Val Thr Glu
      130                     135                     140

o Gln Glu Glu Ser Glu Glu Glu Val Glu Glu Pro Glu Glu Arg Gln
      145                     150                     155                     160

n Thr Pro Glu Val Val Pro Asp Asp Ser Gly Thr Phe Tyr Asp Gln
      165                     170                     175

a Val Val Ser Asn Asp Met Glu Glu His Leu Glu Glu Pro Val Ala
      180                     185                     190

```

## eolf-seql-S000001.txt

lu Pro Glu Pro Asp Pro Glu Pro Glu Pro Glu Gln Glu Pro Val Ser  
 195 200 205  
 lu Ile Gln Glu Glu Lys Pro Glu Pro Val Leu Glu Glu Thr Ala Pro  
 210 215 220  
 lu Asp Ala Gln Lys Ser Ser Ser Pro Ala Pro Ala Asp Ile Ala Gln  
 25 230 235 240  
 hr Val Gln Glu Asp Leu Arg Thr Phe Ser Trp Ala Ser Val Thr Ser  
 245 250 255  
 ys Asn Leu Pro Pro Ser Gly Ala Val Pro Val Thr Gly Ile Pro Pro  
 260 265 270  
 is Val Val Lys Val Pro Ala Ser Gln Pro Arg Pro Glu Ser Lys Pro  
 275 280 285  
 lu Ser Gln Ile Pro Pro Gln Arg Pro Gln Arg Asp Gln Arg Val Arg  
 290 295 300  
 lu Gln Arg Ile Asn Ile Pro Pro Gln Arg Gly Pro Arg Pro Ile Arg  
 305 310 315 320  
 lu Ala Gly Glu Gln Gly Asp Ile Glu Pro Arg Arg Met Val Arg His  
 325 330 335  
 to Asp Ser His Gln Leu Phe Ile Gly Asn Leu Pro His Glu Val Asp  
 340 345 350  
 rs Ser Glu Leu Lys Asp Phe Phe Gln Ser Tyr Gly Asn Val Val Glu  
 355 360 365  
 lu Arg Ile Asn Ser Gly Gly Lys Leu Pro Asn Phe Gly Phe Val Val  
 370 375 380  
 le Asp Asp Ser Glu Pro Val Gln Lys Val Leu Ser Asn Arg Pro Ile  
 385 390 395 400  
 t Phe Arg Gly Glu Val Arg Leu Asn Val Glu Glu Lys Lys Thr Arg

eolf-seql-S000001.txt

405

410

415

la Ala Arg Glu Gly Asp Arg Arg Asp Asn Arg Leu Arg Gly Pro Gly  
                   420                                  425                                  430

ly Pro Arg Gly Gly Leu Gly Gly Gly Met Arg Gly Pro Pro Arg Gly  
                   435                                  440                                  445

ly Met Val Gln Lys Pro Gly Phe Gly Val Gly Arg Gly Leu Ala Pro  
                   450                                  455                                  460

rg Gln  
 55

210> 130  
 211> 245  
 212> PRT  
 213> Homo sapiens

100> 130

st Thr Leu Phe Pro Val Leu Leu Phe Leu Val Ala Gly Leu Leu Pro  
                                   5                                  10                                  15

er Phe Pro Ala Asn Glu Asp Lys Asp Pro Ala Phe Thr Ala Leu Leu  
                                   20                                  25                                  30

ir Thr Gln Thr Gln Val Gln Arg Glu Ile Val Asn Lys His Asn Glu  
                   35                                  40                                  45

u Arg Arg Ala Val Ser Pro Pro Ala Arg Asn Met Leu Lys Met Glu  
                   50                                  55                                  60

p Asn Lys Glu Ala Ala Ala Asn Ala Gln Lys Trp Ala Asn Gln Cys  
                                   70                                  75                                  80

n Tyr Arg His Ser Asn Pro Lys Asp Arg Met Thr Ser Leu Lys Cys  
                                   85                                  90                                  95

y Glu Asn Leu Tyr Met Ser Ser Ala Ser Ser Ser Trp Ser Gln Ala  
                   100                                  105                                  110

e Gln Ser Trp Phe Asp Glu Tyr Asn Asp Phe Asp Phe Gly Val Gly

eof-seq1-S000001.txt  
120

115

125

ro Lys Thr Pro Asn Ala Val Val Gly His Tyr Thr Gln Val Val Trp  
130 135 140

yr Ser Ser Tyr Leu Val Gly Cys Gly Asn Ala Tyr Cys Pro Asn Gln  
145 150 155 160

ys Val Leu Lys Tyr Tyr Tyr Val Cys Gln Tyr Cys Pro Ala Gly Asn  
165 170 175

rp Ala Asn Arg Leu Tyr Val Pro Tyr Glu Gln Gly Ala Pro Cys Ala  
180 185 190

er Cys Pro Asp Asn Cys Asp Asp Gly Leu Cys Thr Asn Gly Cys Lys  
195 200 205

yr Glu Asp Leu Tyr Ser Asn Cys Lys Ser Leu Lys Leu Thr Leu Thr  
210 215 220

ys Lys His Gln Leu Val Arg Asp Ser Cys Lys Ala Ser Cys Asn Cys  
225 230 235 240

er Asn Ser Ile Tyr  
245

10> 131

11> 202

12> PRT

13> Homo sapiens

00> 131

at Cys Thr Gly Gly Cys Ala Arg Cys Leu Gly Gly Thr Leu Ile Pro  
5 10 15

u Ala Phe Phe Gly Phe Leu Ala Asn Ile Leu Leu Phe Phe Pro Gly  
20 25 30

y Lys Val Ile Asp Asp Asn Asp His Leu Ser Gln Glu Ile Trp Phe  
35 40 45

e Gly Gly Ile Leu Gly Ser Gly Val Leu Met Ile Phe Pro Ala Leu



eolf-seql-S000001.txt

50

55

60

al Phe Leu Gly Leu Lys Asn Asn Asp Cys Cys Gly Cys Cys Gly Asn  
5 70 75 80

lu Gly Cys Gly Lys Arg Phe Ala Met Phe Thr Ser Thr Ile Phe Ala  
85 90 95

al Val Gly Phe Leu Gly Ala Gly Tyr Ser Phe Ile Ile Ser Ala Ile  
100 105 110

er Ile Asn Lys Gly Pro Lys Cys Leu Met Ala Asn Ser Thr Trp Gly  
115 120 125

yr Pro Phe His Asp Gly Asp Tyr Leu Asn Asp Glu Ala Leu Trp Asn  
130 135 140

ys Cys Arg Glu Pro Leu Asn Val Val Pro Trp Asn Leu Thr Leu Phe  
15 150 155 160

er Ile Leu Leu Val Val Gly Gly Ile Gln Met Val Leu Cys Ala Ile  
165 170 175

in Val Val Asn Gly Leu Leu Gly Thr Leu Cys Gly Asp Cys Gln Cys  
180 185 190

ys Gly Cys Cys Gly Gly Asp Gly Pro Val  
195 200

:10&gt; 132

:11&gt; 295

:12&gt; PRT

:13&gt; Homo sapiens

:00&gt; 132

st Gln Pro Glu Gly Ala Glu Lys Gly Lys Ser Phe Lys Gln Arg Leu  
5 10 15

l Leu Lys Ser Ser Leu Ala Lys Glu Thr Leu Ser Glu Phe Leu Gly  
20 25 30

r Phe Ile Leu Ile Val Leu Gly Cys Gly Cys Val Ala Gln Ala Ile

eolf-seql-S000001.txt

35

40

45

```

eu Ser Arg Gly Arg Phe Gly Gly Val Ile Thr Ile Asn Val Gly Phe
 50          55          60

er Met Ala Val Ala Met Ala Ile Tyr Val Ala Gly Gly Val Ser Gly
 5          70          75          80

ly His Ile Asn Pro Ala Val Ser Leu Ala Met Cys Leu Phe Gly Arg
          85          90          95

et Lys Trp Phe Lys Leu Pro Phe Tyr Val Gly Ala Gln Phe Leu Gly
          100          105          110

la Phe Val Gly Ala Ala Thr Val Phe Gly Ile Tyr Tyr Asp Gly Leu
 115          120          125

et Ser Phe Ala Gly Gly Lys Leu Leu Ile Val Gly Glu Asn Ala Thr
 130          135          140

la His Ile Phe Ala Thr Tyr Pro Ala Pro Tyr Leu Ser Leu Ala Asn
 45          150          155          160

la Phe Ala Asp Gln Val Val Ala Thr Met Ile Leu Leu Ile Ile Val
          165          170          175

ne Ala Ile Phe Asp Ser Arg Asn Leu Gly Ala Pro Arg Gly Leu Glu
          180          185          190

co Ile Ala Ile Gly Leu Leu Ile Ile Val Ile Ala Ser Ser Leu Gly
 195          200          205

eu Asn Ser Gly Cys Ala Met Asn Pro Ala Arg Asp Leu Ser Pro Arg
 210          215          220

eu Phe Thr Ala Leu Ala Gly Trp Gly Phe Glu Val Phe Arg Ala Gly
 225          230          235          240

on Asn Phe Trp Trp Ile Pro Val Val Gly Pro Leu Val Gly Ala Val
          245          250          255

```

eolf-seql-S000001.txt

le Gly Gly Leu Ile Tyr Val Leu Val Ile Glu Ile His His Pro Glu  
                   260                                  265                                  270

ro Asp Ser Val Phe Lys Ala Glu Gln Ser Glu Asp Lys Pro Glu Lys  
                   275                                  280                                  285

yr Glu Leu Ser Val Ile Met  
                   290                                  295

210> 133  
 211> 288  
 212> PRT  
 213> Homo sapiens

400> 133

et Trp Leu Pro Ala Leu Val Leu Ala Thr Leu Ala Ala Ser Ala Ala  
                                   5                                  10                                  15

rp Ala Val His Pro Ser Ser Pro Pro Val Val Asp Thr Val His Gly  
                   20                                  25                                  30

ys Val Leu Gly Lys Phe Ile Ser Leu Glu Gly Phe Ala Gln Pro Val  
                   35                                  40                                  45

la Val Phe Leu Gly Ile Pro Phe Ala Lys Pro Pro Leu Gly Pro Leu  
                   50                                  55                                  60

g Phe Thr Pro Pro Gln Pro Ala Glu Pro Trp Ser Phe Val Lys Asn  
                                   70                                  75                                  80

a Thr Leu Tyr Pro Pro Met Phe Thr Gln Asp Pro Arg Arg Gly Gly  
                   85                                  90                                  95

n Leu Ile Ser Glu Leu Phe Thr Asn Arg Lys Glu Asn Ile Pro Leu  
                   100                                  105                                  110

s Leu Ser Glu Asp Cys Leu Tyr Leu Asn Ile Tyr Thr Pro Ala Asp  
                   115                                  120                                  125

u Thr Lys Lys Asn Arg Leu Pro Val Met Val Trp Ile His Gly Gly  
                   130                                  135                                  140

eolf-seql-S000001.txt

ly Leu Met Val Gly Ala Ala Ser Thr Tyr Asp Gly Leu Ala Leu Ala  
 45 150 155 160

la His Glu Asn Val Val Val Val Thr Ile Gln Tyr Arg Leu Gly Ile  
 165 170 175

rp Gly Phe Phe Ser Thr Gly Asp Glu His Ser Pro Gly Asn Trp Gly  
 180 185 190

is Leu Asp Gln Leu Ala Ala Leu His Trp Val Gln Asp Asn Ile Ala  
 195 200 205

er Phe Gly Gly Asn Pro Gly Ser Val Thr Ile Phe Gly Gly Ser Ala  
 210 215 220

ly Gly Glu Ser Val Ser Val Leu Val Leu Ser Pro Leu Ala Lys Asn  
 225 230 235 240

u Phe His Arg Ala Ile Ser Glu Ser Gly Val Ala Leu Thr Ser Val  
 245 250 255

u Val Lys Lys Gly Asp Val Lys Pro Leu Ala Glu Val Gly Leu Arg  
 260 265 270

u Val Arg Leu Trp Leu Asp Thr His Thr Ser Leu Ala Leu Cys Ser  
 275 280 285

10> 134

11> 98

12> PRT

13> Homo: sapiens

00> 134

t Met Cys Gly Ala Pro Ser Ala Thr Gln Pro Ala Thr Ala Glu Thr  
 5 10 15

n His Ile Ala Asp Gln Val Arg Ser Gln Leu Glu Glu Lys Glu Asn  
 20 25 30

s Lys Phe Pro Val Phe Lys Ala Val Ser Phe Lys Ser Gln Val Val  
 35 40 45

eolf-seql-S000001.txt

la Gly Thr Asn Tyr Phe Ile Lys Val His Val Gly Asp Glu Asp Phe  
 50 55 60

al His Leu Arg Val Phe Gln Ser Leu Pro His Glu Asn Lys Pro Leu  
 5 70 75 80

hr Leu Ser Asn Tyr Gln Thr Asn Lys Ala Lys His Asp Glu Leu Thr  
 85 90 95

yr Phe

210> 135  
 211> 254  
 212> PRT  
 213> Homo sapiens

400> 135

at Ala Ser Leu Leu Lys Val Asp Gln Glu Val Lys Leu Lys Val Asp  
 5 10 15

ar Phe Arg Glu Arg Ile Thr Ser Glu Ala Glu Asp Leu Val Ala Asn  
 20 25 30

re Phe Pro Lys Lys Leu Leu Glu Leu Asp Ser Phe Leu Lys Glu Pro  
 35 40 45

le Leu Asn Ile His Asp Leu Thr Gln Ile His Ser Asp Met Asn Leu  
 50 55 60

so Val Pro Asp Pro Ile Leu Leu Thr Asn Ser His Asp Gly Leu Asp  
 70 75 80

.y Pro Thr Tyr Lys Lys Arg Arg Leu Asp Glu Cys Glu Glu Ala Phe  
 85 90 95

.n Gly Thr Lys Val Phe Val Met Pro Asn Gly Met Leu Lys Ser Asn  
 100 105 110

.n Gln Leu Val Asp Ile Ile Glu Lys Val Lys Pro Glu Ile Arg Leu  
 115 120 125

eolf-seql-S000001.txt

eu Ile Glu Lys Cys Asn Thr Val Lys Met Trp Val Gln Leu Leu Ile  
 130 135 140

ro Arg Ile Glu Asp Gly Asn Asn Phe Gly Val Ser Ile Gln Glu Glu  
 45 150 155 160

hr Val Ala Glu Leu Arg Thr Val Glu Ser Glu Ala Ala Ser Tyr Leu  
 165 170 175

sp Gln Ile Ser Arg Tyr Tyr Ile Thr Arg Ala Lys Leu Val Ser Lys  
 180 185 190

le Ala Lys Tyr Pro His Val Glu Asp Tyr Arg Arg Thr Val Thr Glu  
 195 200 205

le Asp Glu Lys Glu Tyr Ile Ser Leu Arg Leu Ile Ile Ser Glu Leu  
 210 215 220

rg Asn Gln Tyr Val Thr Leu His Asp Met Ile Leu Lys Asn Ile Glu  
 25 230 235 240

ys Ile Lys Arg Pro Arg Ser Ser Asn Ala Glu Thr Leu Tyr  
 245 250

210> 136

211> 189

212> PRT

213> Homo sapiens

100> 136

st Gly Leu Gly Ala Arg Gly Ala Trp Ala Ala Leu Leu Leu Gly Thr  
 5 10 15

u Gln Val Leu Ala Leu Leu Gly Ala Ala His Glu Ser Ala Ala Met  
 20 25 30

a Glu Thr Leu Gln His Val Pro Ser Asp His Thr Asn Glu Thr Ser  
 35 40 45

n Ser Thr Val Lys Pro Pro Thr Ser Val Ala Ser Asp Ser Ser Asn  
 50 55 60

## eolf-seql-S000001.txt

hr Thr Val Thr Thr Met Lys Pro Thr Ala Ala Ser Asn Thr Thr Thr  
5 70 75 80

ro Gly Met Val Ser Thr Asn Met Thr Ser Thr Thr Leu Lys Ser Thr  
85 90 95

ro Lys Thr Thr Ser Val Ser Gln Asn Thr Ser Gln Ile Ser Thr Ser  
100 105 110

ar Met Thr Val Thr His Asn Ser Ser Val Thr Ser Ala Ala Ser Ser  
115 120 125

al Thr Ile Thr Thr Thr Met His Ser Glu Ala Lys Lys Gly Ser Lys  
130 135 140

ne Asp Thr Gly Ser Phe Val Gly Gly Ile Val Leu Thr Leu Gly Val  
145 150 155 160

eu Ser Ile Leu Tyr Ile Gly Cys Lys Met Tyr Tyr Ser Arg Arg Gly  
165 170 175

le Arg Tyr Arg Thr Ile Asp Glu His Asp Ala Ile Ile  
180 185

?10> 137

?11> 2314

?12> PRT

?13> Homo sapiens

?00> 137

st Arg Ile Leu Lys Arg Phe Leu Ala Cys Ile Gln Leu Leu Cys Val  
5 10 15

's Arg Leu Asp Trp Ala Asn Gly Tyr Tyr Arg Gln Gln Arg Lys Leu  
20 25 30

l Glu Glu Ile Gly Trp Ser Tyr Thr Gly Ala Leu Asn Gln Lys Asn  
35 40 45

p Gly Lys Lys Tyr Pro Thr Cys Asn Ser Pro Lys Gln Ser Pro Ile  
50 55 60

eolf-seql-S000001.txt

```

sn Ile Asp Glu Asp Leu Thr Gln Val Asn Val Asn Leu Lys Lys Leu
5          70          75          80

ys Phe Gln Gly Trp Asp Lys Thr Ser Leu Glu Asn Thr Phe Ile His
      85          90          95

sn Thr Gly Lys Thr Val Glu Ile Asn Leu Thr Asn Asp Tyr Arg Val
      100          105          110

er Gly Gly Val Ser Glu Met Val Phe Lys Ala Ser Lys Ile Thr Phe
      115          120          125

is Trp Gly Lys Cys Asn Met Ser Ser Asp Gly Ser Glu His Ser Leu
      130          135          140

lu Gly Gln Lys Phe Pro Leu Glu Met Gln Ile Tyr Cys Phe Asp Ala
45          150          155          160

sp Arg Phe Ser Ser Phe Glu Glu Ala Val Lys Gly Lys Gly Lys Leu
      165          170          175

rg Ala Leu Ser Ile Leu Phe Glu Val Gly Thr Glu Glu Asn Leu Asp
      180          185          190

re Lys Ala Ile Ile Asp Gly Val Glu Ser Val Ser Arg Phe Gly Lys
      195          200          205

ln Ala Ala Leu Asp Pro Phe Ile Leu Leu Asn Leu Leu Pro Asn Ser
      210          215          220

ir Asp Lys Tyr Tyr Ile Tyr Asn Gly Ser Leu Thr Ser Pro Pro Cys
25          230          235          240

ir Asp Thr Val Asp Trp Ile Val Phe Lys Asp Thr Val Ser Ile Ser
      245          250          255

u Ser Gln Leu Ala Val Phe Cys Glu Val Leu Thr Met Gln Gln Ser
      260          265          270

y Tyr Val Met Leu Met Asp Tyr Leu Gln Asn Asn Phe Arg Glu Gln
      275          280          285

```



## eolf-seql-S000001.txt

```

ln Tyr Lys Phe Ser Arg Gln Val Phe Ser Ser Tyr Thr Gly Lys Glu
 290                               295                               300

lu Ile His Glu Ala Val Cys Ser Ser Glu Pro Glu Asn Val Gln Ala
 05                               310                               315                               320

sp Pro Glu Asn Tyr Thr Ser Leu Leu Val Thr Trp Glu Arg Pro Arg
                               325                               330                               335

al Val Tyr Asp Thr Met Ile Glu Lys Phe Ala Val Leu Tyr Gln Gln
                               340                               345                               350

eu Asp Gly Glu Asp Gln Thr Lys His Glu Phe Leu Thr Asp Gly Tyr
 355                               360                               365

ln Asp Leu Gly Ala Ile Leu Asn Asn Leu Leu Pro Asn Met Ser Tyr
 370                               375                               380

al Leu Gln Ile Val Ala Ile Cys Thr Asn Gly Leu Tyr Gly Lys Tyr
 85                               390                               395                               400

er Asp Gln Leu Ile Val Asp Met Pro Thr Asp Asn Pro Glu Leu Asp
                               405                               410                               415

eu Phe Pro Glu Leu Ile Gly Thr Glu Glu Ile Ile Lys Glu Glu Glu
                               420                               425                               430

lu Gly Lys Asp Ile Glu Glu Gly Ala Ile Val Asn Pro Gly Arg Asp
                               435                               440                               445

er Ala Thr Asn Gln Ile Arg Lys Lys Glu Pro Gln Ile Ser Thr Thr
 450                               455                               460

ar His Tyr Asn Arg Ile Gly Thr Lys Tyr Asn Glu Ala Lys Thr Asn
 55                               470                               475                               480

rg Ser Pro Thr Arg Gly Ser Glu Phe Ser Gly Lys Gly Asp Val Pro
                               485                               490                               495

sn Thr Ser Leu Asn Ser Thr Ser Gln Pro Val Thr Lys Leu Ala Thr
                               500                               505                               510

```

## eolf-seql-S000001.txt

lu Lys Asp Ile Ser Leu Thr Ser Gln Thr Val Thr Glu Leu Pro Pro  
     515                    520                    525  
 is Thr Val Glu Gly Thr Ser Ala Ser Leu Asn Asp Gly Ser Lys Thr  
     530                    535                    540  
 al Leu Arg Ser Pro His Met Asn Leu Ser Gly Thr Ala Glu Ser Leu  
     45                    550                    555                    560  
 sn Thr Val Ser Ile Thr Glu Tyr Glu Glu Glu Ser Leu Leu Thr Ser  
                     565                    570                    575  
 he Lys Leu Asp Thr Gly Ala Glu Asp Ser Ser Gly Ser Ser Pro Ala  
                     580                    585                    590  
 hr Ser Ala Ile Pro Phe Ile Ser Glu Asn Ile Ser Gln Gly Tyr Ile  
     595                    600                    605  
 he Ser Ser Glu Asn Pro Glu Thr Ile Thr Tyr Asp Val Leu Ile Pro  
     610                    615                    620  
 lu Ser Ala Arg Asn Ala Ser Glu Asp Ser Thr Ser Ser Gly Ser Glu  
     25                    630                    635                    640  
 lu Ser Leu Lys Asp Pro Ser Met Glu Gly Asn Val Trp Phe Pro Ser  
                     645                    650                    655  
 er Thr Asp Ile Thr Ala Gln Pro Asp Val Gly Ser Gly Arg Glu Ser  
                     660                    665                    670  
 ie Leu Gln Thr Asn Tyr Thr Glu Ile Arg Val Asp Glu Ser Glu Lys  
     675                    680                    685  
 ir Thr Lys Ser Phe Ser Ala Gly Pro Val Met Ser Gln Gly Pro Ser  
     690                    695                    700  
 al Thr Asp Leu Glu Met Pro His Tyr Ser Thr Phe Ala Tyr Phe Pro  
     05                    710                    715                    720  
 ir Glu Val Thr Pro His Ala Phe Thr Pro Ser Ser Arg Gln Gln Asp

eolf-seql-S000001.txt  
 725 730 735

eu Val Ser Thr Val Asn Val Val Tyr Ser Gln Thr Thr Gln Pro Val  
                   740                  745                  750

yr Asn Gly Glu Thr Pro Leu Gln Pro Ser Tyr Ser Ser Glu Val Phe  
                   755                  760                  765

ro Leu Val Thr Pro Leu Leu Leu Asp Asn Gln Ile Leu Asn Thr Thr  
                   770                  775                  780

ro Ala Ala Ser Ser Ser Asp Ser Ala Leu His Ala Thr Pro Val Phe  
  85                                  790                  795                  800

ro Ser Val Asp Val Ser Phe Glu Ser Ile Leu Ser Ser Tyr Asp Gly  
                   805                  810                  815

la Pro Leu Leu Pro Phe Ser Ser Ala Ser Phe Ser Ser Glu Leu Phe  
                   820                  825                  830

rg His Leu His Thr Val Ser Gln Ile Leu Pro Gln Val Thr Ser Ala  
                   835                  840                  845

ar Glu Ser Asp Lys Val Pro Leu His Ala Ser Leu Pro Val Ala Gly  
                   850                  855                  860

ly Asp Leu Leu Leu Glu Pro Ser Leu Ala Gln Tyr Ser Asp Val Leu  
  55                                  870                  875                  880

er Thr Thr His Ala Ala Ser Glu Thr Leu Glu Phe Gly Ser Glu Ser  
                   885                  890                  895

ly Val Leu Tyr Lys Thr Leu Met Phe Ser Gln Val Glu Pro Pro Ser  
                   900                  905                  910

er Asp Ala Met Met His Ala Arg Ser Ser Gly Pro Glu Pro Ser Tyr  
                   915                  920                  925

a Leu Ser Asp Asn Glu Gly Ser Gln His Ile Phe Thr Val Ser Tyr  
  530                                  935                  940

eolf-seql-S000001.txt

```

er Ser Ala Ile Pro Val His Asp Ser Val Gly Val Thr Tyr Gln Gly
45                               950                955                960

er Leu Phe Ser Gly Pro Ser His Ile Pro Ile Pro Lys Ser Ser Leu
                               965                970                975

le Thr Pro Thr Ala Ser Leu Leu Gln Pro Thr His Ala Leu Ser Gly
                               980                985                990

sp Gly Glu Trp Ser Gly Ala Ser Ser Asp Ser Glu Phe Leu Leu Pro
                               995                1000                1005

sp Thr Asp Gly Leu Thr Ala Leu Asn Ile Ser Ser Pro Val Ser
1010                               1015                1020

al Ala Glu Phe Thr Tyr Thr Thr Ser Val Phe Gly Asp Asp Asn
1025                               1030                1035

ys Ala Leu Ser Lys Ser Glu Ile Ile Tyr Gly Asn Glu Thr Glu
1040                               1045                1050

eu Gln Ile Pro Ser Phe Asn Glu Met Val Tyr Pro Ser Glu Ser
1055                               1060                1065

ir Val Met Pro Asn Met Tyr Asp Asn Val Asn Lys Leu Asn Ala
1070                               1075                1080

er Leu Gln Glu Thr Ser Val Ser Ile Ser Ser Thr Lys Gly Met
1085                               1090                1095

ie Pro Gly Ser Leu Ala His Thr Thr Thr Lys Val Phe Asp His
1100                               1105                1110

u Ile Ser Gln Val Pro Glu Asn Asn Phe Ser Val Gln Pro Thr
1115                               1120                1125

s Thr Val Ser Gln Ala Ser Gly Asp Thr Ser Leu Lys Pro Val
1130                               1135                1140

u Ser Ala Asn Ser Glu Pro Ala Ser Ser Asp Pro Ala Ser Ser
1145                               1150                1155

```

## eolf-seql-S000001.txt

lu Met Leu Ser Pro Ser Thr Gln Leu Leu Phe Tyr Glu Thr Ser  
 1160 1165 1170  
 la Ser Phe Ser Thr Glu Val Leu Leu Gln Pro Ser Phe Gln Ala  
 1175 1180 1185  
 er Asp Val Asp Thr Leu Leu Lys Thr Val Leu Pro Ala Val Pro  
 1190 1195 1200  
 er Asp Pro Ile Leu Val Glu Thr Pro Lys Val Asp Lys Ile Ser  
 1205 1210 1215  
 er Thr Met Leu His Leu Ile Val Ser Asn Ser Ala Ser Ser Glu  
 1220 1225 1230  
 sn Met Leu His Ser Thr Ser Val Pro Val Phe Asp Val Ser Pro  
 1235 1240 1245  
 ar Ser His Met His Ser Ala Ser Leu Gln Gly Leu Thr Ile Ser  
 1250 1255 1260  
 yr Ala Ser Glu Lys Tyr Glu Pro Val Leu Leu Lys Ser Glu Ser  
 1265 1270 1275  
 er His Gln Val Val Pro Ser Leu Tyr Ser Asn Asp Glu Leu Phe  
 1280 1285 1290  
 ln Thr Ala Asn Leu Glu Ile Asn Gln Ala His Pro Pro Lys Gly  
 1295 1300 1305  
 rg His Val Phe Ala Thr Pro Val Leu Ser Ile Asp Glu Pro Leu  
 1310 1315 1320  
 sn Thr Leu Ile Asn Lys Leu Ile His Ser Asp Glu Ile Leu Thr  
 1325 1330 1335  
 er Thr Lys Ser Ser Val Thr Gly Lys Val Phe Ala Gly Ile Pro  
 1340 1345 1350  
 ar Val Ala Ser Asp Thr Phe Val Ser Thr Asp His Ser Val Pro  
 1355 1360 1365

## eolf-seql-S000001.txt

le Gly Asn Gly His Val Ala Ile Thr Ala Val Ser Pro His Arg  
 1370 1375 1380  
 sp Gly Ser Val Thr Ser Thr Lys Leu Leu Phe Pro Ser Lys Ala  
 1385 1390 1395  
 hr Ser Glu Leu Ser His Ser Ala Lys Ser Asp Ala Gly Leu Val  
 1400 1405 1410  
 ly Gly Gly Glu Asp Gly Asp Thr Asp Asp Asp Gly Asp Asp Asp  
 1415 1420 1425  
 sp Asp Arg Asp Ser Asp Gly Leu Ser Ile His Lys Cys Met Ser  
 1430 1435 1440  
 ys Ser Ser Tyr Arg Glu Ser Gln Glu Lys Val Met Asn Asp Ser  
 1445 1450 1455  
 sp Thr His Glu Asn Ser Leu Met Asp Gln Asn Asn Pro Ile Ser  
 1460 1465 1470  
 yr Ser Leu Ser Glu Asn Ser Glu Glu Asp Asn Arg Val Thr Ser  
 1475 1480 1485  
 al Ser Ser Asp Ser Gln Thr Gly Met Asp Arg Ser Pro Gly Lys  
 1490 1495 1500  
 er Pro Ser Ala Asn Gly Leu Ser Gln Lys His Asn Asp Gly Lys  
 1505 1510 1515  
 lu Glu Asn Asp Ile Gln Thr Gly Ser Ala Leu Leu Pro Leu Ser  
 1520 1525 1530  
 o Glu Ser Lys Ala Trp Ala Val Leu Thr Ser Asp Glu Glu Ser  
 1535 1540 1545  
 y Ser Gly Gln Gly Thr Ser Asp Ser Leu Asn Glu Asn Glu Thr  
 1550 1555 1560  
 r Thr Asp Phe Ser Phe Ala Asp Thr Asn Glu Lys Asp Ala Asp

eolf-seql-S000001.txt

```

1565                                1570                                1575

ly Ile  Leu Ala Ala Gly Asp  Ser Glu Ile Thr Pro  Gly Phe Pro
1580                                1585                                1590

ln Ser  Pro Thr Ser Ser Val  Thr Ser Glu Asn Ser  Glu Val Phe
1595                                1600                                1605

is Val  Ser Glu Ala Glu Ala  Ser Asn Ser Ser His  Glu Ser Arg
1610                                1615                                1620

le Gly  Leu Ala Glu Gly Leu  Glu Ser Glu Lys Lys  Ala Val Ile
1625                                1630                                1635

ro Leu  Val Ile Val Ser Ala  Leu Thr Phe Ile Cys  Leu Val Val
1640                                1645                                1650

eu Val  Gly Ile Leu Ile Tyr  Trp Arg Lys Cys Phe  Gln Thr Ala
1655                                1660                                1665

ls Phe  Tyr Leu Glu Asp Ser  Thr Ser Pro Arg Val  Ile Ser Thr
1670                                1675                                1680

co Pro  Thr Pro Ile Phe Pro  Ile Ser Asp Asp Val  Gly Ala Ile
1685                                1690                                1695

co Ile  Lys His Phe Pro Lys  His Val Ala Asp Leu  His Ala Ser
1700                                1705                                1710

er Gly  Phe Thr Glu Glu Phe  Glu Thr Leu Lys Glu  Phe Tyr Gln
1715                                1720                                1725

u Val  Gln Ser Cys Thr Val  Asp Leu Gly Ile Thr  Ala Asp Ser
1730                                1735                                1740

er Asn  His Pro Asp Asn Lys  His Lys Asn Arg Tyr  Ile Asn Ile
1745                                1750                                1755

l Ala  Tyr Asp His Ser Arg  Val Lys Leu Ala Gln  Leu Ala Glu
1760                                1765                                1770

```

## eolf-seql-S000001.txt

ys Asp Gly Lys Leu Thr Asp Tyr Ile Asn Ala Asn Tyr Val Asp  
 1775 1780 1785

ly Tyr Asn Arg Pro Lys Ala Tyr Ile Ala Ala Gln Gly Pro Leu  
 1790 1795 1800

ys Ser Thr Ala Glu Asp Phe Trp Arg Met Ile Trp Glu His Asn  
 1805 1810 1815

al Glu Val Ile Val Met Ile Thr Asn Leu Val Glu Lys Gly Arg  
 1820 1825 1830

rg Lys Cys Asp Gln Tyr Trp Pro Ala Asp Gly Ser Glu Glu Tyr  
 1835 1840 1845

ly Asn Phe Leu Val Thr Gln Lys Ser Val Gln Val Leu Ala Tyr  
 1850 1855 1860

yr Thr Val Arg Asn Phe Thr Leu Arg Asn Thr Lys Ile Lys Lys  
 1865 1870 1875

ly Ser Gln Lys Gly Arg Pro Ser Gly Arg Val Val Thr Gln Tyr  
 1880 1885 1890

is Tyr Thr Gln Trp Pro Asp Met Gly Val Pro Glu Tyr Ser Leu  
 1895 1900 1905

o Val Leu Thr Phe Val Arg Lys Ala Ala Tyr Ala Lys Arg His  
 1910 1915 1920

a Val Gly Pro Val Val Val His Cys Ser Ala Gly Val Gly Arg  
 1925 1930 1935

r Gly Thr Tyr Ile Val Leu Asp Ser Met Leu Gln Gln Ile Gln  
 1940 1945 1950

s Glu Gly Thr Val Asn Ile Phe Gly Phe Leu Lys His Ile Arg  
 1955 1960 1965

r Gln Arg Asn Tyr Leu Val Gln Thr Glu Glu Gln Tyr Val Phe  
 1970 1975 1980



## eolf-seql-S000001.txt

le His Asp Thr Leu Val Glu Ala Ile Leu Ser Lys Glu Thr Glu  
 1985 1990 1995  
  
 al Leu Asp Ser His Ile His Ala Tyr Val Asn Ala Leu Leu Ile  
 2000 2005 2010  
  
 ro Gly Pro Ala Gly Lys Thr Lys Leu Glu Lys Gln Phe Gln Leu  
 2015 2020 2025  
  
 eu Ser Gln Ser Asn Ile Gln Gln Ser Asp Tyr Ser Ala Ala Leu  
 2030 2035 2040  
  
 ys Gln Cys Asn Arg Glu Lys Asn Arg Thr Ser Ser Ile Ile Pro  
 2045 2050 2055  
  
 al Glu Arg Ser Arg Val Gly Ile Ser Ser Leu Ser Gly Glu Gly  
 2060 2065 2070  
  
 rr Asp Tyr Ile Asn Ala Ser Tyr Ile Met Gly Tyr Tyr Gln Ser  
 2075 2080 2085  
  
 sn Glu Phe Ile Ile Thr Gln His Pro Leu Leu His Thr Ile Lys  
 2090 2095 2100  
  
 sp Phe Trp Arg Met Ile Trp Asp His Asn Ala Gln Leu Val Val  
 2105 2110 2115  
  
 et Ile Pro Asp Gly Gln Asn Met Ala Glu Asp Glu Phe Val Tyr  
 2120 2125 2130  
  
 p Pro Asn Lys Asp Glu Pro Ile Asn Cys Glu Ser Phe Lys Val  
 2135 2140 2145  
  
 rr Leu Met Ala Glu Glu His Lys Cys Leu Ser Asn Glu Glu Lys  
 2150 2155 2160  
  
 u Ile Ile Gln Asp Phe Ile Leu Glu Ala Thr Gln Asp Asp Tyr  
 2165 2170 2175  
  
 l Leu Glu Val Arg His Phe Gln Cys Pro Lys Trp Pro Asn Pro  
 2180 2185 2190

## eolf-seql-S000001.txt

sp Ser Pro Ile Ser Lys Thr Phe Glu Leu Ile Ser Val Ile Lys  
 2195 2200 2205  
 lu Glu Ala Ala Asn Arg Asp Gly Pro Met Ile Val His Asp Glu  
 2210 2215 2220  
 is Gly Gly Val Thr Ala Gly Thr Phe Cys Ala Leu Thr Thr Leu  
 2225 2230 2235  
 et His Gln Leu Glu Lys Glu Asn Ser Val Asp Val Tyr Gln Val  
 2240 2245 2250  
 la Lys Met Ile Asn Leu Met Arg Pro Gly Val Phe Ala Asp Ile  
 2255 2260 2265  
 lu Gln Tyr Gln Phe Leu Tyr Lys Val Ile Leu Ser Leu Val Ser  
 2270 2275 2280  
 hr Arg Gln Glu Glu Asn Pro Ser Thr Ser Leu Asp Ser Asn Gly  
 2285 2290 2295  
 la Ala Leu Pro Asp Gly Asn Ile Ala Glu Ser Leu Glu Ser Leu  
 2300 2305 2310

al

210> 138  
 211> 372  
 212> PRT  
 213> Homo sapiens

100&gt; 138

et Lys Gln Leu Pro Val Leu Glu Pro Gly Asp Lys Pro Arg Lys Ala  
 5 10 15  
 ir Trp Tyr Thr Leu Thr Val Pro Gly Asp Ser Pro Cys Ala Arg Val  
 20 25 30  
 y His Ser Cys Ser Tyr Leu Pro Pro Val Gly Asn Ala Lys Arg Gly  
 35 40 45

## eolf-seql-S000001.txt

ys Val Phe Ile Val Gly Gly Ala Asn Pro Asn Arg Ser Phe Ser Asp  
50 55 60

al His Thr Met Asp Leu Gly Lys His Gln Trp Asp Leu Asp Thr Cys  
5 70 75 80

ys Gly Leu Leu Pro Arg Tyr Glu His Ala Ser Phe Ile Pro Ser Cys  
85 90 95

ir Pro Asp Arg Ile Trp Val Phe Gly Gly Ala Asn Gln Ser Gly Asn  
100 105 110

g Asn Cys Leu Gln Val Leu Asn Pro Glu Thr Arg Thr Trp Thr Thr  
115 120 125

o Glu Val Thr Ser Pro Pro Pro Ser Pro Arg Thr Phe His Thr Ser  
130 135 140

er Ala Ala Ile Gly Asn Gln Leu Tyr Val Phe Gly Gly Gly Glu Arg  
145 150 155 160

y Ala Gln Pro Val Gln Asp Thr Lys Leu His Val Phe Asp Ala Asn  
165 170 175

ir Leu Thr Trp Ser Gln Pro Glu Thr Leu Gly Asn Pro Pro Ser Pro  
180 185 190

g His Gly His Val Met Val Ala Ala Gly Thr Lys Leu Phe Ile His  
195 200 205

y Gly Leu Ala Gly Asp Arg Phe Tyr Asp Asp Leu His Cys Ile Asp  
210 215 220

e Ser Asp Met Lys Trp Gln Lys Leu Asn Pro Thr Gly Ala Ala Pro  
230 235 240

a Gly Cys Ala Ala His Ser Ala Val Ala Met Gly Lys His Val Tyr  
245 250 255

e Phe Gly Gly Met Thr Pro Ala Gly Ala Leu Asp Thr Met Tyr Gln

## eolf-seql-S000001.txt

260

265

270

yr His Thr Glu Glu Gln His Trp Thr Leu Leu Lys Phe Asp Thr Leu  
 275 280 285

eu Pro Pro Gly Arg Leu Asp His Ser Met Cys Ile Ile Pro Trp Pro  
 290 295 300

al Thr Cys Ala Ser Glu Lys Glu Asp Ser Asn Ser Leu Thr Leu Asn  
 05 310 315 320

is Glu Ala Glu Lys Glu Asp Ser Ala Asp Lys Val Met Ser His Ser  
 325 330 335

ly Asp Ser His Glu Glu Ser Gln Thr Ala Thr Leu Leu Cys Leu Val  
 340 345 350

he Gly Gly Met Asn Thr Glu Gly Glu Ile Tyr Asp Asp Cys Ile Val  
 355 360 365

hr Val Val Asp  
 370

210> 139  
 211> 425  
 212> PRT  
 213> Homo sapiens

400> 139

et Ala Asp Lys Glu Ala Ala Phe Asp Asp Ala Val Glu Glu Arg Val  
 5 10 15

le Asn Glu Glu Tyr Lys Ile Trp Lys Lys Asn Thr Pro Phe Leu Tyr  
 20 25 30

sp Leu Val Met Thr His Ala Leu Glu Trp Pro Ser Leu Thr Ala Gln  
 35 40 45

sp Leu Pro Asp Val Thr Arg Pro Glu Gly Lys Asp Phe Ser Ile His  
 50 55 60

g Leu Val Leu Gly Thr His Thr Ser Asp Glu Gln Asn His Leu Val

```

eolf-seql-S000001.txt
5              70              75              80
le Ala Ser Val Gln Leu Pro Asn Asp Asp Ala Gln Phe Asp Ala Ser
      85                      90                      95
is Tyr Asp Ser Glu Lys Gly Glu Phe Gly Gly Phe Gly Ser Val Ser
      100                      105                      110
ly Lys Ile Glu Ile Glu Ile Lys Ile Asn His Glu Gly Glu Val Asn
      115                      120                      125
rg Ala Arg Tyr Met Pro Gln Asn Pro Cys Ile Ile Ala Thr Lys Thr
      130                      135                      140
ro Ser Ser Asp Val Leu Val Phe Asp Tyr Thr Lys His Pro Ser Lys
45                      150                      155                      160
ro Asp Pro Ser Gly Glu Cys Asn Pro Asp Leu Arg Leu Arg Gly His
      165                      170                      175
ln Lys Glu Gly Tyr Gly Leu Ser Trp Asn Pro Asn Leu Ser Gly His
      180                      185                      190
eu Leu Ser Ala Ser Asp Asp His Thr Ile Cys Leu Trp Asp Ile Ser
      195                      200                      205
la Val Pro Lys Glu Gly Lys Val Val Asp Ala Lys Thr Ile Phe Thr
      210                      215                      220
y His Thr Ala Val Val Glu Asp Val Ser Trp His Leu Leu His Glu
25                      230                      235                      240
er Leu Phe Gly Ser Val Ala Asp Asp Gln Lys Leu Met Ile Trp Asp
      245                      250                      255
r Arg Ser Asn Asn Thr Ser Lys Pro Ser His Ser Val Asp Ala His
      260                      265                      270
r Ala Glu Val Asn Cys Leu Ser Phe Asn Pro Tyr Ser Glu Phe Ile
      275                      280                      285

```

eolf-seql-S000001.txt

eu Ala Thr Gly Ser Ala Asp Lys Thr Val Ala Leu Trp Asp Leu Arg  
 290 295 300

sn Leu Lys Leu Lys Leu His Ser Phe Glu Ser His Lys Asp Glu Ile  
 05 310 315 320

he Gln Val Gln Trp Ser Pro His Asn Glu Thr Ile Leu Ala Ser Ser  
 325 330 335

ly Thr Asp Arg Arg Leu Asn Val Trp Asp Leu Ser Lys Ile Gly Glu  
 340 345 350

lu Gln Ser Pro Glu Asp Ala Glu Asp Gly Pro Pro Glu Leu Leu Phe  
 355 360 365

le His Gly Gly His Thr Ala Lys Ile Ser Asp Phe Ser Trp Asn Pro  
 370 375 380

sn Glu Pro Trp Val Ile Cys Ser Val Ser Glu Asp Asn Ile Met Gln  
 85 390 395 400

al Trp Gln Met Ala Glu Asn Ile Tyr Asn Asp Glu Asp Pro Glu Gly  
 405 410 415

er Val Asp Pro Glu Gly Gln Gly Ser  
 420 425

210> 140

211> 633

212> PRT

213> Homo sapiens

100> 140

et Asn Pro Ser Ala Pro Ser Tyr Pro Met Ala Ser Leu Tyr Val Gly  
 5 10 15

sp Leu His Pro Asp Val Thr Glu Ala Met Leu Tyr Glu Lys Phe Ser  
 20 25 30

o Ala Gly Pro Ile Leu Ser Ile Arg Val Cys Arg Asp Met Ile Thr  
 35 40 45

eolf-seql-S000001.txt

```

rg Arg Ser Leu Gly Tyr Ala Tyr Val Asn Phe Gln Gln Pro Ala Asp
 50          55          60

la Glu Arg Ala Leu Asp Thr Met Asn Phe Asp Val Ile Lys Gly Lys
 5          70          75          80

ro Val Arg Ile Met Trp Ser Gln Arg Asp Pro Ser Leu Arg Lys Ser
          85          90          95

ly Val Gly Asn Ile Phe Ile Lys Asn Leu Asp Lys Ser Ile Asp Asn
          100          105          110

ys Ala Leu Tyr Asp Thr Phe Ser Ala Phe Gly Asn Ile Leu Ser Cys
          115          120          125

ys Val Val Cys Asp Glu Asn Gly Ser Lys Gly Tyr Gly Phe Val His
          130          135          140

ne Glu Thr Gln Glu Ala Ala Glu Arg Ala Ile Glu Lys Met Asn Gly
          145          150          155          160

et Leu Leu Asn Asp Arg Lys Val Phe Val Gly Arg Phe Lys Ser Arg
          165          170          175

ys Glu Arg Glu Ala Glu Leu Gly Ala Arg Ala Lys Glu Phe Thr Asn
          180          185          190

al Tyr Ile Lys Asn Phe Gly Glu Asp Met Asp Asp Glu Arg Leu Lys
          195          200          205

sp Leu Phe Gly Pro Ala Leu Ser Val Lys Val Met Thr Asp Glu Ser
          210          215          220

.y Lys Ser Lys Gly Phe Gly Phe Val Ser Phe Glu Arg His Glu Asp
 5          230          235          240

.a Gln Lys Ala Val Asp Glu Met Asn Gly Lys Glu Leu Asn Gly Lys
          245          250          255

n Ile Tyr Val Gly Arg Ala Gln Lys Lys Val Glu Arg Gln Thr Glu
          260          265          270

```

## eolf-seql-S000001.txt

```

eu Lys Arg Lys Phe Glu Gln Met Lys Gln Asp Arg Ile Thr Arg Tyr
   275                               280                               285

ln Gly Val Asn Leu Tyr Val Lys Asn Leu Asp Asp Gly Ile Asp Asp
   290                               295                               300

lu Arg Leu Arg Lys Glu Phe Ser Pro Phe Gly Thr Ile Thr Ser Ala
 05                               310                               315                               320

ys Val Met Met Glu Gly Gly Arg Ser Lys Gly Phe Gly Phe Val Cys
                               325                               330                               335

he Ser Ser Pro Glu Glu Ala Thr Lys Ala Val Thr Glu Met Asn Gly
                               340                               345                               350

rg Ile Val Ala Thr Lys Pro Leu Tyr Val Ala Leu Ala Gln Arg Lys
   355                               360                               365

lu Glu Arg Gln Ala His Leu Thr Asn Gln Tyr Met Gln Arg Met Ala
   370                               375                               380

er Val Arg Ala Val Pro Asn Pro Val Ile Asn Pro Tyr Gln Pro Ala
 35                               390                               395                               400

co Pro Ser Gly Tyr Phe Met Ala Ala Ile Pro Gln Thr Gln Asn Arg
                               405                               410                               415

la Ala Tyr Tyr Pro Pro Ser Gln Val Ala Gln Leu Arg Pro Ser Pro
   420                               425                               430

cg Trp Thr Ala Gln Gly Ala Arg Pro His Pro Phe Gln Asn Met Pro
   435                               440                               445

.y Ala Ile Arg Pro Ala Ala Pro Arg Pro Pro Phe Ser Thr Met Arg
   450                               455                               460

co Ala Ser Ser Gln Val Pro Arg Val Met Ser Thr Gln Arg Val Ala
 55                               470                               475                               480

n Thr Ser Thr Gln Thr Met Gly Pro Arg Pro Ala Ala Ala Ala Ala
   485                               490                               495

```



## eolf-seql-S000001.txt

la Ala Thr Pro Ala Val Arg Thr Val Pro Gln Tyr Lys Tyr Ala Ala  
                   500                                  505                                  510

ly Val Arg Asn Pro Gln Gln His Leu Asn Ala Gln Pro Gln Val Thr  
                   515                                  520                                  525

et Gln Gln Pro Ala Val His Val Gln Gly Gln Glu Pro Leu Thr Ala  
           530                                  535                                  540

er Met Leu Ala Ser Ala Pro Pro Gln Glu Gln Lys Gln Met Leu Gly  
   45                                  550                                  555                                  560

lu Arg Leu Phe Pro Leu Ile Gln Ala Met His Pro Thr Leu Ala Gly  
                   565                                  570                                  575

ys Ile Thr Gly Met Leu Leu Glu Ile Asp Asn Ser Glu Leu Leu His  
                   580                                  585                                  590

et Leu Glu Ser Pro Glu Ser Leu Arg Ser Lys Val Asp Glu Ala Val  
           595                                  600                                  605

la Val Leu Gln Ala His Gln Ala Lys Glu Ala Ala Gln Lys Ala Val  
       610                                  615                                  620

sn Ser Ala Thr Gly Val Pro Thr Val  
   25                                  630

?10> 141

?11> 420

?12> PRT

?13> Homo sapiens

!00> 141

et Met Tyr Ser Pro Ile Cys Leu Thr Gln Asp Glu Phe His Pro Phe  
                   5                                  10                                  15

et Glu Ala Leu Leu Pro His Val Arg Ala Ile Ala Tyr Thr Trp Phe  
           20                                  25                                  30

n Leu Gln Ala Arg Lys Arg Lys Tyr Phe Lys Lys His Glu Lys Arg  
       35                                  40                                  45

## eolf-seql-S000001.txt

et Ser Lys Asp Glu Glu Arg Ala Val Lys Asp Glu Leu Leu Ser Glu  
 50 55 60

ys Pro Glu Ile Lys Gln Lys Trp Ala Ser Arg Leu Leu Ala Lys Leu  
 5 70 75 80

rg Lys Asp Ile Arg Gln Glu Tyr Arg Glu Asp Phe Val Leu Thr Val  
 85 90 95

hr Gly Lys Lys His Pro Cys Cys Val Leu Ser Asn Pro Asp Gln Lys  
 100 105 110

ly Lys Ile Arg Arg Ile Asp Cys Leu Arg Gln Ala Asp Lys Val Trp  
 115 120 125

rg Leu Asp Leu Val Met Val Ile Leu Phe Lys Gly Ile Pro Leu Glu  
 130 135 140

er Thr Asp Gly Glu Arg Leu Met Lys Ser Pro His Cys Thr Asn Pro  
 145 150 155 160

la Leu Cys Val Gln Pro His His Ile Thr Val Ser Val Lys Glu Leu  
 165 170 175

sp Leu Phe Leu Ala Tyr Tyr Val Gln Glu Gln Asp Ser Gly Gln Ser  
 180 185 190

y Ser Pro Ser His Asn Asp Pro Ala Lys Asn Pro Pro Gly Tyr Leu  
 195 200 205

u Asp Ser Phe Val Lys Ser Gly Val Phe Asn Val Ser Glu Leu Val  
 210 215 220

g Val Ser Arg Thr Pro Ile Thr Gln Gly Thr Gly Val Asn Phe Pro  
 225 230 235 240

e Gly Glu Ile Pro Ser Gln Pro Tyr Tyr His Asp Met Asn Ser Gly  
 245 250 255

l Asn Leu Gln Arg Ser Leu Ser Ser Pro Pro Ser Ser Lys Arg Pro

eolf-seql-S000001.txt

260

265

270

ys Thr Ile Ser Ile Asp Glu Asn Met Glu Pro Ser Pro Thr Gly Asp  
 275 280 285

he Tyr Pro Ser Pro Ser Ser Pro Ala Ala Gly Ser Arg Thr Trp His  
 290 295 300

lu Arg Asp Gln Asp Met Ser Ser Pro Thr Thr Met Lys Lys Pro Glu  
 305 310 315 320

ys Pro Leu Phe Ser Ser Ala Ser Pro Gln Asp Ser Ser Pro Arg Leu  
 325 330 335

er Thr Phe Pro Gln His His His Pro Gly Ile Pro Gly Val Ala His  
 340 345 350

er Val Ile Ser Thr Arg Thr Pro Pro Pro Pro Ser Pro Leu Pro Phe  
 355 360 365

co Thr Gln Ala Ile Leu Pro Pro Ala Pro Ser Ser Tyr Phe Ser His  
 370 375 380

co Thr Ile Arg Tyr Pro Pro His Leu Asn Pro Gln Asp Thr Leu Lys  
 385 390 395 400

sn Tyr Val Pro Ser Tyr Asp Pro Ser Ser Pro Gln Thr Ser Gln Ser  
 405 410 415

sp Tyr Leu Gly  
 420

10> 142

11> 248

12> PRT

13> Homo sapiens

00> 142

st Glu Gly Val Glu Glu Lys Lys Lys Glu Val Pro Ala Val Pro Glu  
 5 10 15

r Leu Lys Lys Lys Arg Arg Asn Phe Ala Glu Leu Lys Ile Lys Arg

eolf-seql-S000001.txt

20

25

30

eu Arg Lys Lys Phe Ala Gln Lys Met Leu Arg Lys Ala Arg Arg Lys  
           35                                  40                                  45

eu Ile Tyr Glu Lys Ala Lys His Tyr His Lys Glu Tyr Arg Gln Met  
       50                                  55                                  60

yr Arg Thr Glu Ile Arg Met Ala Arg Met Ala Arg Lys Ala Gly Asn  
       5                                  70                                  75                                  80

he Tyr Val Pro Ala Glu Pro Lys Leu Ala Phe Val Ile Arg Ile Arg  
                                   85                                  90                                  95

ly Ile Asn Gly Val Ser Pro Lys Val Arg Lys Val Leu Gln Leu Leu  
                                   100                                  105                                  110

rg Leu Arg Gln Ile Phe Asn Gly Thr Phe Val Lys Leu Asn Lys Ala  
           115                                  120                                  125

er Ile Asn Met Leu Arg Ile Val Glu Pro Tyr Ile Ala Trp Gly Tyr  
       130                                  135                                  140

co Asn Leu Lys Ser Val Asn Glu Leu Ile Tyr Lys Arg Gly Tyr Gly  
       15                                  150                                  155                                  160

ys Ile Asn Lys Lys Arg Ile Ala Leu Thr Asp Asn Ala Leu Ile Ala  
                                   165                                  170                                  175

rg Ser Leu Gly Lys Tyr Gly Ile Ile Cys Met Glu Asp Leu Ile His  
           180                                  185                                  190

u Ile Tyr Thr Val Gly Lys Arg Phe Lys Glu Ala Asn Asn Phe Leu  
       195                                  200                                  205

rp Pro Phe Lys Leu Ser Ser Pro Arg Gly Gly Met Lys Lys Lys Thr  
       210                                  215                                  220

or His Phe Val Glu Gly Gly Asp Ala Gly Asn Arg Glu Asp Gln Ile  
       225                                  230                                  235                                  240

eolf-seql-S000001.txt

```

sn Arg Leu Ile Arg Arg Met Asn
      245

210> 143
211> 420
212> PRT
213> Homo sapiens

400> 143

et Glu Val Pro Pro Arg Leu Ser His Val Pro Pro Pro Leu Phe Pro
      5                                10                                15

er Ala Pro Ala Thr Leu Ala Ser Arg Ser Leu Ser His Trp Arg Pro
      20                                25                                30

rg Pro Pro Arg Gln Leu Ala Pro Leu Leu Pro Ser Leu Ala Pro Ser
      35                                40                                45

er Ala Arg Gln Gly Ala Arg Arg Ala Gln Arg His Val Thr Ala Gln
      50                                55                                60

ln Pro Ser Arg Leu Ala Gly Gly Ala Ala Ile Lys Gly Gly Arg Arg
      5                                70                                75                                80

rg Arg Pro Asp Leu Phe Arg Arg His Phe Lys Ser Ser Ser Ile Gln
      85                                90                                95

rg Ser Ala Ala Ala Ala Ala Ala Thr Arg Thr Ala Arg Gln His Pro
      100                                105                                110

o Ala Asp Ser Ser Val Thr Met Glu Asp Met Asn Glu Tyr Ser Asn
      115                                120                                125

e Glu Glu Phe Ala Glu Gly Ser Lys Ile Asn Ala Ser Lys Asn Gln
      130                                135                                140

n Asp Asp Gly Lys Met Phe Ile Gly Gly Leu Ser Trp Asp Thr Ser
      5                                150                                155                                160

s Lys Asp Leu Thr Glu Tyr Leu Ser Arg Phe Gly Glu Val Val Asp
      165                                170                                175

```

eolf-seql-S0000001.txt

ys Thr Ile Lys Thr Asp Pro Val Thr Gly Arg Ser Arg Gly Phe Gly  
 180 185 190

he Val Leu Phe Lys Asp Ala Ala Ser Val Asp Lys Val Leu Glu Leu  
 195 200 205

ys Glu His Lys Leu Asp Gly Lys Leu Ile Asp Pro Lys Arg Ala Lys  
 210 215 220

la Leu Lys Gly Lys Glu Pro Pro Lys Lys Val Phe Val Gly Gly Leu  
 23 230 235 240

er Pro Asp Thr Ser Glu Glu Gln Ile Lys Glu Tyr Phe Gly Ala Phe  
 245 250 255

ly Glu Ile Glu Asn Ile Glu Leu Pro Met Asp Thr Lys Thr Asn Glu  
 260 265 270

rg Arg Gly Phe Cys Phe Ile Thr Tyr Thr Asp Glu Glu Pro Val Lys  
 275 280 285

ys Leu Leu Glu Ser Arg Tyr His Gln Ile Gly Ser Gly Lys Cys Glu  
 290 295 300

le Lys Val Ala Gln Pro Lys Glu Val Tyr Arg Gln Gln Gln Gln Gln  
 305 310 315 320

in Lys Gly Gly Arg Gly Ala Ala Ala Gly Gly Arg Gly Gly Thr Arg  
 325 330 335

ly Arg Gly Arg Gly Gln Gly Gln Asn Trp Asn Gln Gly Phe Asn Asn  
 340 345 350

er Tyr Asp Gln Gly Tyr Gly Asn Tyr Asn Ser Ala Tyr Gly Gly Asp  
 355 360 365

in Asn Tyr Ser Gly Tyr Gly Gly Tyr Asp Tyr Thr Gly Tyr Asn Tyr  
 370 375 380

y Asn Tyr Gly Tyr Gly Gln Gly Tyr Ala Asp Tyr Ser Gly Gln Gln  
 385 390 395 400

## eolf-seql-S000001.txt

er Thr Tyr Gly Lys Ala Ser Arg Gly Gly Gly Asn His Gln Asn Asn  
                   405                                  410                                  415

yr Gln Pro Tyr  
                   420

210> 144  
 211> 46  
 212> PRT  
 213> Homo sapiens

100> 144

et Leu Leu Ser Arg Gly Val Leu Pro Phe Leu Ser Tyr Met Lys Phe  
                   5                                  10                                  15

eu Ser Gln Glu Arg Gln Asp Tyr Ile Phe Phe Phe Phe Phe Ser Ser  
                   20                                  25                                  30

eu Ser Trp Cys Ser Val Phe Leu Val Ile Arg Ile Leu Ile  
                   35                                  40                                  45

210> 145  
 211> 76  
 212> PRT  
 213> Homo sapiens

100> 145

et Ser Lys Ala His Pro Pro Glu Leu Lys Lys Phe Met Asp Lys Lys  
                   5                                  10                                  15

eu Ser Leu Lys Leu Asn Gly Gly Arg His Val Gln Gly Ile Leu Arg  
                   20                                  25                                  30

y Phe Asp Pro Phe Met Asn Leu Val Ile Asp Glu Cys Val Glu Met  
                   35                                  40                                  45

a Thr Ser Gly Gln Gln Asn Asn Ile Gly Met Val Val Ile Arg Gly  
                   50                                  55                                  60

n Ser Ile Ile Met Leu Glu Ala Leu Glu Arg Val  
                   70                                  75

eolf-seql-S000001.txt

```

210> 146
211> 184
212> PRT
213> Homo sapiens

400> 146

et Arg Glu Tyr Lys Leu Val Val Leu Gly Ser Gly Gly Val Gly Lys
      5                      10                      15

er Ala Leu Thr Val Gln Phe Val Gln Gly Ile Phe Val Glu Lys Tyr
      20                      25                      30

sp Pro Thr Ile Glu Asp Ser Tyr Arg Lys Gln Val Glu Val Asp Cys
      35                      40                      45

ln Gln Cys Met Leu Glu Ile Leu Asp Thr Ala Gly Thr Glu Gln Phe
      50                      55                      60

hr Ala Met Arg Asp Leu Tyr Met Lys Asn Gly Gln Gly Phe Ala Leu
      5                      70                      75                      80

al Tyr Ser Ile Thr Ala Gln Ser Thr Phe Asn Asp Leu Gln Asp Leu
      85                      90                      95

rg Glu Gln Ile Leu Arg Val Lys Asp Thr Glu Asp Val Pro Met Ile
      100                     105                     110

eu Val Gly Asn Lys Cys Asp Leu Glu Asp Glu Arg Val Val Gly Lys
      115                     120                     125

lu Gln Gly Gln Asn Leu Ala Arg Gln Trp Cys Asn Cys Ala Phe Leu
      130                     135                     140

lu Ser Ser Ala Lys Ser Lys Ile Asn Val Asn Glu Ile Phe Tyr Asp
      15                      150                     155                     160

eu Val Arg Gln Ile Asn Arg Lys Thr Pro Val Glu Lys Lys Lys Pro
      165                     170                     175

's Lys Lys Ser Cys Leu Leu Leu
      180

```



eolf-seql-S000001.txt

```

210> 147
211> 440
212> PRT
213> Homo sapiens

400> 147

et Glu Gln Arg Gly Gln Asn Ala Pro Ala Ala Ser Gly Ala Arg Lys
      5                                10                        15

rg His Gly Pro Gly Pro Arg Glu Ala Arg Gly Ala Arg Pro Gly Leu
      20                                25                        30

rg Val Pro Lys Thr Leu Val Leu Val Val Ala Ala Val Leu Leu Leu
      35                                40                        45

al Ser Ala Glu Ser Ala Leu Ile Thr Gln Gln Asp Leu Ala Pro Gln
      50                                55                        60

ln Arg Ala Ala Pro Gln Gln Lys Arg Ser Ser Pro Ser Glu Gly Leu
      5                                70                        75                        80

/s Pro Pro Gly His His Ile Ser Glu Asp Gly Arg Asp Cys Ile Ser
      85                                90                        95

/s Lys Tyr Gly Gln Asp Tyr Ser Thr His Trp Asn Asp Leu Leu Phe
      100                               105                        110

/s Leu Arg Cys Thr Arg Cys Asp Ser Gly Glu Val Glu Leu Ser Pro
      115                               120                        125

/s Thr Thr Thr Arg Asn Thr Val Cys Gln Cys Glu Glu Gly Thr Phe
      130                               135                        140

g Glu Glu Asp Ser Pro Glu Met Cys Arg Lys Cys Arg Thr Gly Cys
      15                                150                        155                        160

o Arg Gly Met Val Lys Val Gly Asp Cys Thr Pro Trp Ser Asp Ile
      165                               170                        175

u Cys Val His Lys Glu Ser Gly Thr Lys His Ser Gly Glu Ala Pro
      180                               185                        190

```

eolf-seql-S000001.txt

```

la Val Glu Glu Thr Val Thr Ser Ser Pro Gly Thr Pro Ala Ser Pro
   195                               200                               205

ys Ser Leu Ser Gly Ile Ile Ile Gly Val Thr Val Ala Ala Val Val
   210                               215                               220

eu Ile Val Ala Val Phe Val Cys Lys Ser Leu Leu Trp Lys Lys Val
   225                               230                               235                               240

eu Pro Tyr Leu Lys Gly Ile Cys Ser Gly Gly Gly Gly Asp Pro Glu
   245                               250                               255

rg Val Asp Arg Ser Ser Gln Arg Pro Gly Ala Glu Asp Asn Val Leu
   260                               265                               270

sn Glu Ile Val Ser Ile Leu Gln Pro Thr Gln Val Pro Glu Gln Glu
   275                               280                               285

at Glu Val Gln Glu Pro Ala Glu Pro Thr Gly Val Asn Met Leu Ser
   290                               295                               300

ro Gly Glu Ser Glu His Leu Leu Glu Pro Ala Glu Ala Glu Arg Ser
   305                               310                               315                               320

n Arg Arg Arg Leu Leu Val Pro Ala Asn Glu Gly Asp Pro Thr Glu
   325                               330                               335

r Leu Arg Gln Cys Phe Asp Asp Phe Ala Asp Leu Val Pro Phe Asp
   340                               345                               350

r Trp Glu Pro Leu Met Arg Lys Leu Gly Leu Met Asp Asn Glu Ile
   355                               360                               365

s Val Ala Lys Ala Glu Ala Ala Gly His Arg Asp Thr Leu Tyr Thr
   370                               375                               380

t Leu Ile Lys Trp Val Asn Lys Thr Gly Arg Asp Ala Ser Val His
   385                               390                               395                               400

r Leu Leu Asp Ala Leu Glu Thr Leu Gly Glu Arg Leu Ala Lys Gln
   405                               410                               415

```

## eolf-seql-S000001.txt

ys Ile Glu Asp His Leu Leu Ser Ser Gly Lys Phe Met Tyr Leu Glu  
                   420                  425                  430

ly Asn Ala Asp Ser Ala Met Ser  
           435                  440

210> 148  
 211> 126  
 212> PRT  
 213> Homo sapiens

100> 148

et Ala Asp Glu Ile Ala Lys Ala Gln Val Ala Arg Pro Gly Gly Asp  
                   5                  10                  15

ir Ile Phe Gly Lys Ile Ile Arg Lys Glu Ile Pro Ala Lys Ile Ile  
           20                  25                  30

ie Glu Asp Asp Arg Cys Leu Ala Phe His Asp Ile Ser Pro Gln Ala  
           35                  40                  45

o Thr His Phe Leu Val Ile Pro Lys Lys His Ile Ser Gln Ile Ser  
    50                  55                  60

l Ala Glu Asp Asp Asp Glu Ser Leu Leu Gly His Leu Met Ile Val  
    70                  75                  80

y Lys Lys Cys Ala Ala Asp Leu Gly Leu Asn Lys Gly Tyr Arg Met  
           85                  90                  95

l Val Asn Glu Gly Ser Asp Gly Gly Gln Ser Val Tyr His Val His  
           100                  105                  110

u His Val Leu Gly Gly Arg Gln Met His Trp Pro Pro Gly  
           115                  120                  125

10> 149  
 11> 320  
 12> PRT  
 13> Homo sapiens

00> 149

eolf-seql-S000001.txt

```

et Ala Glu Gly Asp Ala Gly Ser Asp Gln Arg Gln Asn Glu Glu Ile
   5                               10                               15

lu Ala Met Ala Ala Ile Tyr Gly Glu Glu Trp Cys Val Ile Asp Asp
   20                               25                               30

ys Ala Lys Ile Phe Cys Ile Arg Ile Ser Asp Asp Ile Asp Asp Pro
   35                               40                               45

ys Trp Thr Leu Cys Leu Gln Val Met Leu Pro Asn Glu Tyr Pro Gly
   50                               55                               60

hr Ala Pro Pro Ile Tyr Gln Leu Asn Ala Pro Trp Leu Lys Gly Gln
   5                               70                               75                               80

lu Arg Ala Asp Leu Ser Asn Ser Leu Glu Glu Ile Tyr Ile Gln Asn
   85                               90                               95

le Gly Glu Ser Ile Leu Tyr Leu Trp Val Glu Lys Ile Arg Asp Val
  100                               105                               110

eu Ile Gln Lys Ser Gln Met Thr Glu Pro Gly Pro Asp Val Lys Lys
  115                               120                               125

ys Thr Glu Glu Glu Asp Val Glu Cys Glu Asp Asp Leu Ile Leu Ala
  130                               135                               140

ys Gln Pro Glu Ser Ser Val Lys Ala Leu Asp Phe Asp Ile Ser Glu
  145                               150                               155                               160

ir Arg Thr Glu Val Glu Val Glu Glu Leu Pro Pro Ile Asp His Gly
  165                               170                               175

le Pro Ile Thr Asp Arg Arg Ser Thr Phe Gln Ala His Leu Ala Pro
  180                               185                               190

al Val Cys Pro Lys Gln Val Lys Met Val Leu Ser Lys Leu Tyr Glu
  195                               200                               205

in Lys Lys Ile Ala Ser Ala Thr His Asn Ile Tyr Ala Tyr Arg Ile
  210                               215                               220

```

## eolf-seql-S000001.txt

```

yr Cys Glu Asp Lys Gln Thr Phe Leu Gln Asp Cys Glu Asp Asp Gly
25                230                235                240

lu Thr Ala Ala Gly Gly Arg Leu Leu His Leu Met Glu Ile Leu Asn
                245                250                255

al Lys Asn Val Met Val Val Val Ser Arg Trp Tyr Gly Gly Ile Leu
                260                265                270

eu Gly Pro Asp Arg Phe Lys His Ile Asn Asn Cys Ala Arg Asn Ile
275                280                285

eu Val Glu Lys Asn Tyr Thr Asn Ser Pro Glu Glu Ser Ser Lys Ala
290                295                300

eu Gly Lys Asn Lys Lys Val Arg Lys Asp Lys Lys Arg Asn Glu His
35                310                315                320

210> 150
211> 326
212> PRT
213> Homo sapiens

100> 150

et His Arg Thr Thr Arg Ile Lys Ile Thr Glu Leu Asn Pro His Leu
                5                10                15

et Cys Val Leu Cys Gly Gly Tyr Phe Ile Asp Ala Thr Thr Ile Ile
20                25                30

u Cys Leu His Ser Phe Cys Lys Thr Cys Ile Val Arg Tyr Leu Glu
35                40                45

ir Ser Lys Tyr Cys Pro Ile Cys Asp Val Gln Val His Lys Thr Arg
50                55                60

o Leu Leu Asn Ile Arg Ser Asp Lys Thr Leu Gln Asp Ile Val Tyr
70                75                80

s Leu Val Pro Gly Leu Phe Lys Asn Glu Met Lys Arg Arg Arg Asp
85                90                95

```

## eolf-seql-S000001.txt

```

ne Tyr Ala Ala His Pro Ser Ala Asp Ala Ala Asn Gly Ser Asn Glu
    100                      105                      110

sp Arg Gly Glu Val Ala Asp Glu Asp Lys Arg Ile Ile Thr Asp Asp
    115                      120                      125

lu Ile Ile Ser Leu Ser Ile Glu Phe Phe Asp Gln Asn Arg Leu Asp
    130                      135                      140

rg Lys Val Asn Lys Asp Lys Glu Lys Ser Lys Glu Glu Val Asn Asp
    15                      150                      155                      160

/s Arg Tyr Leu Arg Cys Pro Ala Ala Met Thr Val Met His Leu Arg
    165                      170                      175

/s Phe Leu Arg Ser Lys Met Asp Ile Pro Asn Thr Phe Gln Ile Asp
    180                      185                      190

al Met Tyr Glu Glu Glu Pro Leu Lys Asp Tyr Tyr Thr Leu Met Asp
    195                      200                      205

e Ala Tyr Ile Tyr Thr Trp Arg Arg Asn Gly Pro Leu Pro Leu Lys
    210                      215                      220

r Arg Val Arg Pro Thr Cys Lys Arg Met Lys Ile Ser His Gln Arg
    230                      235                      240

p Gly Leu Thr Asn Ala Gly Glu Leu Glu Ser Asp Ser Gly Ser Asp
    245                      250                      255

s Ala Asn Ser Pro Ala Gly Gly Ile Pro Ser Thr Ser Ser Cys Leu
    260                      265                      270

o Ser Pro Ser Thr Pro Val Gln Ser Pro His Pro Gln Phe Pro His
    275                      280                      285

e Ser Ser Thr Met Asn Gly Thr Ser Asn Ser Pro Ser Gly Asn His
    290                      295                      300

n Ser Ser Phe Ala Asn Arg Pro Arg Lys Ser Ser Val Asn Gly Ser
    310                      315                      320

```

## eolf-seql-S000001.txt

er Ala Thr Ser Ser Gly  
325

210> 151  
211> 466  
212> PRT  
213> Homo sapiens

400> 151

et Val Met Glu Lys Pro Ser Pro Leu Leu Val Gly Arg Glu Phe Val  
5 10 15

rg Gln Tyr Tyr Thr Leu Leu Asn Gln Ala Pro Asp Met Leu His Arg  
20 25 30

ne Tyr Gly Lys Asn Ser Ser Tyr Val His Gly Gly Leu Asp Ser Asn  
35 40 45

ly Lys Pro Ala Asp Ala Val Tyr Gly Gln Lys Glu Ile His Arg Lys  
50 55 60

al Met Ser Gln Asn Phe Thr Asn Cys His Thr Lys Ile Arg His Val  
65 70 75 80

sp Ala His Ala Thr Leu Asn Asp Gly Val Val Val Gln Val Met Gly  
85 90 95

ou Leu Ser Asn Asn Asn Gln Ala Leu Arg Arg Phe Met Gln Thr Phe  
100 105 110

al Leu Ala Pro Glu Gly Ser Val Ala Asn Lys Phe Tyr Val His Asn  
115 120 125

sp Ile Phe Arg Tyr Gln Asp Glu Val Phe Gly Gly Phe Val Thr Glu  
130 135 140

o Gln Glu Glu Ser Glu Glu Glu Val Glu Glu Pro Glu Glu Arg Gln  
15 150 155 160

n Thr Pro Glu Val Val Pro Asp Asp Ser Gly Thr Phe Tyr Asp Gln  
165 170 175

## eolf-seql-S000001.txt

la Val Val Ser Asn Asp Met Glu Glu His Leu Glu Glu Pro Val Ala  
 180 185 190

lu Pro Glu Pro Asp Pro Glu Pro Glu Pro Glu Gln Glu Pro Val Ser  
 195 200 205

lu Ile Gln Glu Glu Lys Pro Glu Pro Val Leu Glu Glu Thr Ala Pro  
 210 215 220

lu Asp Ala Gln Lys Ser Ser Ser Pro Ala Pro Ala Asp Ile Ala Gln  
 225 230 235 240

lr Val Gln Glu Asp Leu Arg Thr Phe Ser Trp Ala Ser Val Thr Ser  
 245 250 255

ls Asn Leu Pro Pro Ser Gly Ala Val Pro Val Thr Gly Ile Pro Pro  
 260 265 270

ls Val Val Lys Val Pro Ala Ser Gln Pro Arg Pro Glu Ser Lys Pro  
 275 280 285

lu Ser Gln Ile Pro Pro Gln Arg Pro Gln Arg Asp Gln Arg Val Arg  
 290 295 300

lu Gln Arg Ile Asn Ile Pro Pro Gln Arg Gly Pro Arg Pro Ile Arg  
 305 310 315 320

lu Ala Gly Glu Gln Gly Asp Ile Glu Pro Arg Arg Met Val Arg His  
 325 330 335

lo Asp Ser His Gln Leu Phe Ile Gly Asn Leu Pro His Glu Val Asp  
 340 345 350

ls Ser Glu Leu Lys Asp Phe Phe Gln Ser Tyr Gly Asn Val Val Glu  
 355 360 365

lu Arg Ile Asn Ser Gly Gly Lys Leu Pro Asn Phe Gly Phe Val Val  
 370 375 380

le Asp Asp Ser Glu Pro Val Gln Lys Val Leu Ser Asn Arg Pro Ile



eolf-seql-S000001.txt  
 35 390 395 400  
 at Phe Arg Gly Glu Val Arg Leu Asn Val Glu Glu Lys Lys Thr Arg  
 405 410 415  
 la Ala Arg Glu Gly Asp Arg Arg Asp Asn Arg Leu Arg Gly Pro Gly  
 420 425 430  
 ly Pro Arg Gly Gly Leu Gly Gly Gly Met Arg Gly Pro Pro Arg Gly  
 435 440 445  
 ly Met Val Gln Lys Pro Gly Phe Gly Val Gly Arg Gly Leu Ala Pro  
 450 455 460  
 rg Gln  
 5  
 10> 152  
 11> 184  
 12> PRT  
 13> Homo sapiens  
 100> 152  
 at Pro Gln Ser Lys Ser Arg Lys Ile Ala Ile Leu Gly Tyr Arg Ser  
 5 10 15  
 al Gly Lys Ser Ser Leu Thr Ile Gln Phe Val Glu Gly Gln Phe Val  
 20 25 30  
 p Ser Tyr Asp Pro Thr Ile Glu Asn Thr Phe Thr Lys Leu Ile Thr  
 35 40 45  
 al Asn Gly Gln Glu Tyr His Leu Gln Leu Val Asp Thr Ala Gly Gln  
 50 55 60  
 p Glu Tyr Ser Ile Phe Pro Gln Thr Tyr Ser Ile Asp Ile Asn Gly  
 70 75 80  
 r Ile Leu Val Tyr Ser Val Thr Ser Ile Lys Ser Phe Glu Val Ile  
 85 90 95  
 s Val Ile His Gly Lys Leu Leu Asp Met Val Gly Lys Val Gln Ile

eolf-seql-S000001.txt

100

105

110

ro Ile Met Leu Val Gly Asn Lys Lys Asp Leu His Met Glu Arg Val  
 115 120 125

le Ser Tyr Glu Glu Gly Lys Ala Leu Ala Glu Ser Trp Asn Ala Ala  
 130 135 140

ne Leu Glu Ser Ser Ala Lys Glu Asn Gln Thr Ala Val Asp Val Phe  
 145 150 155 160

rg Arg Ile Ile Leu Glu Ala Glu Lys Met Asp Gly Ala Ala Ser Gln  
 165 170 175

ly Lys Ser Ser Cys Ser Val Met  
 180

210> 153  
 211> 332  
 212> PRT  
 213> Homo sapiens

100> 153

st Gly Ala Gln Phe Ser Lys Thr Ala Ala Lys Gly Glu Ala Ala Ala  
 5 10 15

u Arg Pro Gly Glu Ala Ala Val Ala Ser Ser Pro Ser Lys Ala Asn  
 20 25 30

y Gln Glu Asn Gly His Val Lys Val Asn Gly Asp Ala Ser Pro Ala  
 35 40 45

a Ala Glu Ser Gly Ala Lys Glu Glu Leu Gln Ala Asn Gly Ser Ala  
 50 55 60

o Ala Ala Asp Lys Glu Glu Pro Ala Ala Ala Gly Ser Gly Ala Ala  
 70 75 80

r Pro Ser Ser Ala Glu Lys Gly Glu Pro Ala Ala Ala Ala Pro  
 85 90 95

u Ala Gly Ala Ser Pro Val Glu Lys Glu Ala Pro Ala Glu Gly Glu

eolf-seql-S000001.txt

100

105

110

la Ala Glu Pro Gly Ser Ala Thr Ala Ala Glu Gly Glu Ala Ala Ser  
 115 120 125

la Ala Ser Ser Thr Ser Ser Pro Lys Ala Glu Asp Gly Ala Thr Pro  
 130 135 140

er Pro Ser Asn Glu Thr Pro Lys Lys Lys Lys Lys Arg Phe Ser Phe  
 15 150 155 160

ys Lys Ser Phe Lys Leu Ser Gly Phe Ser Phe Lys Lys Asn Lys Lys  
 165 170 175

lu Ala Gly Glu Gly Gly Glu Ala Glu Ala Pro Ala Ala Glu Gly Gly  
 180 185 190

ys Asp Glu Ala Ala Gly Gly Ala Ala Ala Ala Ala Ala Glu Ala Gly  
 195 200 205

la Ala Ser Gly Glu Gln Ala Ala Ala Pro Gly Glu Glu Ala Ala Ala  
 210 215 220

y Glu Glu Gly Ala Ala Gly Gly Asp Pro Gln Glu Ala Lys Pro Gln  
 230 235 240

u Ala Ala Val Ala Pro Glu Lys Pro Pro Ala Ser Asp Glu Thr Lys  
 245 250 255

a Ala Glu Glu Pro Ser Lys Val Glu Glu Lys Lys Ala Glu Glu Ala  
 260 265 270

y Ala Ser Ala Ala Ala Cys Glu Ala Pro Ser Ala Ala Gly Pro Gly  
 275 280 285

a Pro Pro Glu Gln Glu Ala Ala Pro Ala Glu Glu Pro Ala Ala Ala  
 290 295 300

a Ala Ser Ser Ala Cys Ala Ala Pro Ser Gln Glu Ala Gln Pro Glu  
 310 315 320

eolf-seql-S000001.txt  
ys Ser Pro Glu Ala Pro Pro Ala Glu Ala Ala Glu  
325 330

210> 154  
211> 86  
212> PRT  
213> Homo sapiens

400> 154

at Pro Gln Tyr Gln Thr Trp Glu Glu Phe Ser Arg Ala Ala Glu Lys  
5 10 15

eu Tyr Leu Ala Asp Pro Met Lys Ala Arg Val Val Leu Lys Tyr Arg  
20 25 30

is Ser Asp Gly Asn Leu Cys Val Lys Val Thr Asp Asp Leu Val Cys  
35 40 45

eu Val Tyr Lys Thr Asp Gln Ala Gln Asp Val Lys Lys Ile Glu Lys  
50 55 60

ie His Ser Gln Leu Met Arg Leu Met Val Ala Lys Glu Ala Arg Asn  
70 75 80

al Thr Met Glu Thr Glu  
85

210> 155  
211> 480  
212> PRT  
213> Homo sapiens

400> 155

at Ile Arg Ala Ala Pro Pro Pro Leu Phe Leu Leu Leu Leu Leu Leu  
5 10 15

u Leu Leu Val Ser Trp Ala Ser Arg Gly Glu Ala Ala Pro Asp Gln  
20 25 30

p Glu Ile Gln Arg Leu Pro Gly Leu Ala Lys Gln Pro Ser Phe Arg  
35 40 45

n Tyr Ser Gly Tyr Leu Lys Ser Ser Gly Ser Lys His Leu His Tyr

eolf-seql-S000001.txt

```

50                                     55                                     60

p Phe Val Glu Ser Gln Lys Asp Pro Glu Asn Ser Pro Val Val Leu
;                                     70                                     75                                     80

p Leu Asn Gly Gly Pro Gly Cys Ser Ser Leu Asp Gly Leu Leu Thr
                                     85                                     90                                     95

u His Gly Pro Phe Leu Val Gln Pro Asp Gly Val Thr Leu Glu Tyr
                                     100                                     105                                     110

n Pro Tyr Ser Trp Asn Leu Ile Ala Asn Val Leu Tyr Leu Glu Ser
                                     115                                     120                                     125

o Ala Gly Val Gly Phe Ser Tyr Ser Asp Asp Lys Phe Tyr Ala Thr
                                     130                                     135                                     140

n Asp Thr Glu Val Ala Gln Ser Asn Phe Glu Ala Leu Gln Asp Phe
5                                     150                                     155                                     160

e Arg Leu Phe Pro Glu Tyr Lys Asn Asn Lys Leu Phe Leu Thr Gly
                                     165                                     170                                     175

u Ser Tyr Ala Gly Ile Tyr Ile Pro Thr Leu Ala Val Leu Val Met
                                     180                                     185                                     190

n Asp Pro Ser Met Asn Leu Gln Gly Leu Ala Val Gly Asn Gly Leu
                                     195                                     200                                     205

r Ser Tyr Glu Gln Asn Asp Asn Ser Leu Val Tyr Phe Ala Tyr Tyr
                                     210                                     215                                     220

s Gly Leu Leu Gly Asn Arg Leu Trp Ser Ser Leu Gln Thr His Cys
5                                     230                                     235                                     240

s Ser Gln Asn Lys Cys Asn Phe Tyr Asp Asn Lys Asp Leu Glu Cys
                                     245                                     250                                     255

l Thr Asn Leu Gln Glu Val Ala Arg Ile Val Gly Asn Ser Gly Leu
                                     260                                     265                                     270

```

eolf-seql-S000001.txt

sn Ile Tyr Asn Leu Tyr Ala Pro Cys Ala Gly Gly Val Pro Ser His  
 275 280 285

ie Arg Tyr Glu Lys Asp Thr Val Val Val Gln Asp Leu Gly Asn Ile  
 290 295 300

ie Thr Arg Leu Pro Leu Lys Arg Met Trp His Gln Ala Leu Leu Arg  
 305 310 315 320

er Gly Asp Lys Val Arg Met Asp Pro Pro Cys Thr Asn Thr Thr Ala  
 325 330 335

la Ser Thr Tyr Leu Asn Asn Pro Tyr Val Arg Lys Ala Leu Asn Ile  
 340 345 350

io Glu Gln Leu Pro Gln Trp Asp Met Cys Asn Phe Leu Val Asn Leu  
 355 360 365

in Tyr Arg Arg Leu Tyr Arg Ser Met Asn Ser Gln Tyr Leu Lys Leu  
 370 375 380

iu Ser Ser Gln Lys Tyr Gln Ile Leu Leu Tyr Asn Gly Asp Val Asp  
 385 390 395 400

it Ala Cys Asn Phe Met Gly Asp Glu Trp Phe Val Asp Ser Leu Asn  
 405 410 415

in Lys Met Glu Val Gln Arg Arg Pro Trp Leu Val Lys Tyr Gly Asp  
 420 425 430

ir Gly Glu Gln Ile Ala Gly Phe Val Lys Glu Phe Ser His Ile Ala  
 435 440 445

ie Leu Thr Ile Lys Gly Ala Gly His Met Val Pro Thr Asp Lys Pro  
 450 455 460

iu Ala Ala Phe Thr Met Phe Ser Arg Phe Leu Asn Lys Gln Pro Tyr  
 465 470 475 480

10> 156  
 11> 217  
 12> PRT

eolf-seql-S000001.txt

213&gt; Homo sapiens

100&gt; 156

at Glu Ala Ile Ala Lys Tyr Asp Phe Lys Ala Thr Ala Asp Asp Glu  
                   5                                  10                                  15

au Ser Phe Lys Arg Gly Asp Ile Leu Lys Val Leu Asn Glu Glu Cys  
                   20                                  25                                  30

sp Gln Asn Trp Tyr Lys Ala Glu Leu Asn Gly Lys Asp Gly Phe Ile  
                   35                                  40                                  45

o Lys Asn Tyr Ile Glu Met Lys Pro His Pro Trp Phe Phe Gly Lys  
                   50                                  55                                  60

e Pro Arg Ala Lys Ala Glu Glu Met Leu Ser Lys Gln Arg His Asp  
                                   70                                  75                                  80

y Ala Phe Leu Ile Arg Glu Ser Glu Ser Ala Pro Gly Asp Phe Ser  
                                   85                                  90                                  95

u Ser Val Lys Phe Gly Asn Asp Val Gln His Phe Lys Val Leu Arg  
                   100                                  105                                  110

p Gly Ala Gly Lys Tyr Phe Leu Trp Val Val Lys Phe Asn Ser Leu  
                   115                                  120                                  125

n Glu Leu Val Asp Tyr His Arg Ser Thr Ser Val Ser Arg Asn Gln  
                   130                                  135                                  140

n Ile Phe Leu Arg Asp Ile Glu Gln Val Pro Gln Gln Pro Thr Tyr  
                   5                                  150                                  155                                  160

l Gln Ala Leu Phe Asp Phe Asp Pro Gln Glu Asp Gly Glu Leu Gly  
                                   165                                  170                                  175

e Arg Arg Gly Asp Phe Ile His Val Met Asp Asn Ser Asp Pro Asn  
                   180                                  185                                  190

p Trp Lys Gly Ala Cys His Gly Gln Thr Gly Met Phe Pro Arg Asn  
                   195                                  200                                  205

## eolf-seql-S000001.txt

```

yr Val Thr Pro Val Asn Arg Asn Val
  210                      215

210> 157
211> 704
212> PRT
213> Homo sapiens

100> 157

at Ala Arg Glu Leu Arg Ala Leu Leu Leu Trp Gly Arg Arg Leu Arg
      5                      10                      15

ro Leu Leu Arg Ala Pro Ala Leu Ala Ala Val Pro Gly Gly Lys Pro
      20                      25                      30

e Leu Cys Pro Arg Arg Thr Thr Ala Gln Leu Gly Pro Arg Arg Asn
      35                      40                      45

ro Ala Trp Ser Leu Gln Ala Gly Arg Leu Phe Ser Thr Gln Thr Ala
      50                      55                      60

u Asp Lys Glu Glu Pro Leu His Ser Ile Ile Ser Ser Thr Glu Ser
;      70                      75                      80

l Gln Gly Ser Thr Ser Lys His Glu Phe Gln Ala Glu Thr Lys Lys
      85                      90                      95

u Leu Asp Ile Val Ala Arg Ser Leu Tyr Ser Glu Lys Glu Val Phe
      100                     105                     110

e Arg Glu Leu Ile Ser Asn Ala Ser Asp Ala Leu Glu Lys Leu Arg
      115                     120                     125

s Lys Leu Val Ser Asp Gly Gln Ala Leu Pro Glu Met Glu Ile His
      130                     135                     140

u Gln Thr Asn Ala Glu Lys Gly Thr Ile Thr Ile Gln Asp Thr Gly
5      150                     155                     160

e Gly Met Thr Gln Glu Glu Leu Val Ser Asn Leu Gly Thr Ile Ala
      165                     170                     175

```



## eolf-seql-S000001.txt

rg Ser Gly Ser Lys Ala Phe Leu Asp Ala Leu Gln Asn Gln Ala Glu  
 180 185 190  
 la Ser Ser Lys Ile Ile Gly Gln Phe Gly Val Gly Phe Tyr Ser Ala  
 195 200 205  
 e Met Val Ala Asp Arg Val Glu Val Tyr Ser Arg Ser Ala Ala Pro  
 210 215 220  
 y Ser Leu Gly Tyr Gln Trp Leu Ser Asp Gly Ser Gly Val Phe Glu  
 225 230 235 240  
 e Ala Glu Ala Ser Gly Val Arg Thr Gly Thr Lys Ile Ile Ile His  
 245 250 255  
 u Lys Ser Asp Cys Lys Glu Phe Ser Ser Glu Ala Arg Val Arg Asp  
 260 265 270  
 l Val Thr Lys Tyr Ser Asn Phe Val Ser Phe Pro Leu Tyr Leu Asn  
 275 280 285  
 y Arg Arg Met Asn Thr Leu Gln Ala Ile Trp Met Met Asp Pro Lys  
 290 295 300  
 p Val Gly Glu Trp Gln His Glu Glu Phe Tyr Arg Tyr Val Ala Gln  
 305 310 315 320  
 a His Asp Lys Pro Arg Tyr Thr Leu His Tyr Lys Thr Asp Ala Pro  
 325 330 335  
 u Asn Ile Arg Ser Ile Phe Tyr Val Pro Asp Met Lys Pro Ser Met  
 340 345 350  
 e Asp Val Ser Arg Glu Leu Gly Ser Ser Val Ala Leu Tyr Ser Arg  
 355 360 365  
 s Val Leu Ile Gln Thr Lys Ala Thr Asp Ile Leu Pro Lys Trp Leu  
 370 375 380  
 g Phe Ile Arg Gly Val Val Asp Ser Glu Asp Ile Pro Leu Asn Leu  
 385 390 395 400

## eolf-seql-S000001.txt

```

er Arg Glu Leu Leu Gln Glu Ser Ala Leu Ile Arg Lys Leu Arg Asp
      405                      410                      415

al Leu Gln Gln Arg Leu Ile Lys Phe Phe Ile Asp Gln Ser Lys Lys
      420                      425                      430

sp Ala Glu Lys Tyr Ala Lys Phe Phe Glu Asp Tyr Gly Leu Phe Met
      435                      440                      445

rg Glu Gly Ile Val Thr Ala Thr Glu Gln Glu Val Lys Glu Asp Ile
      450                      455                      460

a Lys Leu Leu Arg Tyr Glu Ser Ser Ala Leu Pro Ser Gly Gln Leu
45                      470                      475                      480

r Ser Leu Ser Glu Tyr Ala Ser Arg Met Arg Ala Gly Thr Arg Asn
      485                      490                      495

e Tyr Tyr Leu Cys Ala Pro Asn Arg His Leu Ala Glu His Ser Pro
      500                      505                      510

r Tyr Glu Ala Met Lys Lys Lys Asp Thr Glu Val Leu Phe Cys Phe
      515                      520                      525

u Gln Phe Asp Glu Leu Thr Leu Leu His Leu Arg Glu Phe Asp Lys
      530                      535                      540

s Lys Leu Ile Ser Val Glu Thr Asp Ile Val Val Asp His Tyr Lys
5                      550                      555                      560

u Glu Lys Phe Glu Asp Arg Ser Pro Ala Ala Glu Cys Leu Ser Glu
      565                      570                      575

s Glu Thr Glu Glu Leu Met Ala Trp Met Arg Asn Val Leu Gly Ser
      580                      585                      590

g Val Thr Asn Val Lys Val Thr Leu Arg Leu Asp Thr His Pro Ala
      595                      600                      605

t Val Thr Val Leu Glu Met Gly Ala Ala Arg His Phe Leu Arg Met

```

```

eolf-seql-S000001.txt
610                               615                               620

ln Gln Leu Ala Lys Thr Gln Glu Glu Arg Ala Gln Leu Leu Gln Pro
25                               630                               635                               640

hr Leu Glu Ile Asn Pro Arg His Ala Leu Ile Lys Lys Leu Asn Gln
                               645                               650                               655

eu Arg Ala Ser Glu Pro Gly Leu Ala Gln Leu Leu Val Asp Gln Ile
                               660                               665                               670

yr Glu Asn Ala Met Ile Ala Ala Gly Leu Val Asp Asp Pro Arg Ala
                               675                               680                               685

st Val Gly Arg Leu Asn Glu Leu Leu Val Lys Ala Leu Glu Arg His
690                               695                               700

:10> 158
:11> 359
:12> PRT
:13> Homo sapiens

:00> 158

t Ala Ala Val Ser Gly Leu Val Arg Arg Pro Leu Arg Glu Val Ser
                               5                               10                               15

y Leu Leu Lys Arg Arg Phe His Trp Thr Ala Pro Ala Ala Leu Gln
                               20                               25                               30

l Thr Val Arg Asp Ala Ile Asn Gln Gly Met Asp Glu Glu Leu Glu
35                               40                               45

g Asp Glu Lys Val Phe Leu Leu Gly Glu Glu Val Ala Gln Tyr Asp
50                               55                               60

/ Ala Tyr Lys Val Ser Arg Gly Leu Trp Lys Lys Tyr Gly Asp Lys
                               70                               75                               80

; Ile Ile Asp Thr Pro Ile Ser Glu Met Gly Phe Ala Gly Ile Ala
                               85                               90                               95

. Gly Ala Ala Met Ala Gly Leu Arg Pro Ile Cys Glu Phe Met Thr

```

eolf-seql-S000001.txt

100

105

110

ne Asn Phe Ser Met Gln Ala Ile Asp Gln Val Ile Asn Ser Ala Ala  
 115 120 125

ys Thr Tyr Tyr Met Ser Gly Gly Leu Gln Pro Val Pro Ile Val Phe  
 130 135 140

rg Gly Pro Asn Gly Ala Ser Ala Gly Val Ala Ala Gln His Ser Gln  
 145 150 155 160

ys Phe Ala Ala Trp Tyr Gly His Cys Pro Gly Leu Lys Val Val Ser  
 165 170 175

ro Trp Asn Ser Glu Asp Ala Lys Gly Leu Ile Lys Ser Ala Ile Arg  
 180 185 190

sp Asn Asn Pro Val Val Val Leu Glu Asn Glu Leu Met Tyr Gly Val  
 195 200 205

ro Phe Glu Phe Leu Pro Glu Ala Gln Ser Lys Asp Phe Leu Ile Pro  
 210 215 220

le Gly Lys Ala Lys Ile Glu Arg Gln Gly Thr His Ile Thr Val Val  
 225 230 235 240

er His Ser Arg Pro Val Gly His Cys Leu Glu Ala Ala Ala Val Leu  
 245 250 255

er Lys Glu Gly Val Glu Cys Glu Val Ile Asn Met Arg Thr Ile Arg  
 260 265 270

o Met Asp Met Glu Thr Ile Glu Ala Ser Val Met Lys Thr Asn His  
 275 280 285

u Val Thr Val Glu Gly Gly Trp Pro Gln Phe Gly Val Gly Ala Glu  
 290 295 300

e Cys Ala Arg Ile Met Glu Gly Pro Ala Phe Asn Phe Leu Asp Ala  
 310 315 320

eolf-seql-S000001.txt

o Ala Val Arg Val Thr Gly Ala Asp Val Pro Met Pro Tyr Ala Lys  
                   325                                  330                                  335

e Leu Glu Asp Asn Ser Ile Pro Gln Val Lys Asp Ile Ile Phe Ala  
                   340                                  345                                  350

e Lys Lys Thr Leu Asn Ile  
                   355

10> 159

11> 113

12> PRT

13> Homo sapiens

00> 159

t Ser Ala Ser Val Val Ser Val Ile Ser Arg Phe Leu Glu Glu Tyr  
                   5                                  10                                  15

u Ser Ser Thr Pro Gln Arg Leu Lys Leu Leu Asp Ala Tyr Leu Leu  
                   20                                  25                                  30

r Ile Leu Leu Thr Gly Ala Leu Gln Phe Gly Tyr Cys Leu Leu Val  
                   35                                  40                                  45

y Thr Phe Pro Phe Asn Ser Phe Leu Ser Gly Phe Ile Ser Cys Val  
                   50                                  55                                  60

y Ser Phe Ile Leu Ala Val Cys Leu Arg Ile Gln Ile Asn Pro Gln  
                   70                                  75                                  80

n Lys Ala Asp Phe Gln Gly Ile Ser Pro Glu Arg Ala Phe Ala Asp  
                   85                                  90                                  95

e Leu Phe Ala Ser Thr Ile Leu His Leu Val Val Met Asn Phe Val  
                   100                                  105                                  110

y

10> 160

11> 239

12> PRT

13> Homo sapiens

## eolf-seql-S000001.txt

400&gt; 160

at Ala Lys Pro Cys Gly Val Arg Leu Ser Gly Glu Ala Arg Lys Gln  
                   5                  10                  15

al Glu Val Phe Arg Gln Asn Leu Phe Gln Glu Ala Glu Glu Phe Leu  
                   20                  25                  30

yr Arg Phe Leu Pro Gln Lys Ile Ile Tyr Leu Asn Gln Leu Leu Gln  
           35                  40                  45

lu Asp Ser Leu Asn Val Ala Asp Leu Thr Ser Leu Arg Ala Pro Leu  
       50                  55                  60

sp Ile Pro Ile Pro Asp Pro Pro Pro Lys Asp Asp Glu Met Glu Thr  
       70                  75                  80

sp Lys Gln Glu Lys Lys Glu Val His Lys Cys Gly Phe Leu Pro Gly  
           85                  90                  95

sn Glu Lys Val Leu Ser Leu Leu Ala Leu Val Lys Pro Glu Val Trp  
           100                  105                  110

ir Leu Lys Glu Lys Cys Ile Leu Val Ile Thr Trp Ile Gln His Leu  
       115                  120                  125

le Pro Lys Ile Glu Asp Gly Asn Asp Phe Gly Val Ala Ile Gln Glu  
       130                  135                  140

's Val Leu Glu Arg Val Asn Ala Val Lys Thr Lys Val Glu Ala Phe  
       150                  155                  160

n Thr Thr Ile Ser Lys Tyr Phe Ser Glu Arg Gly Asp Ala Val Ala  
           165                  170                  175

s Ala Ser Lys Glu Thr His Val Met Asp Tyr Arg Ala Leu Val His  
           180                  185                  190

u Arg Asp Glu Ala Ala Tyr Gly Glu Leu Arg Ala Met Val Leu Asp  
       195                  200                  205

eolf-seql-S000001.txt

au Arg Ala Phe Tyr Ala Glu Leu Tyr His Ile Ile Ser Ser Asn Leu  
 210 215 220

lu Lys Ile Val Asn Pro Lys Gly Glu Glu Lys Pro Ser Met Tyr  
 25 230 235

210> 161  
 211> 111  
 212> PRT  
 213> Homo sapiens

100> 161

at Ala Gly Lys Gln Ala Val Ser Ala Ser Gly Lys Trp Leu Asp Gly  
 5 10 15

le Arg Lys Trp Tyr Tyr Asn Ala Ala Gly Phe Asn Lys Leu Gly Leu  
 20 25 30

at Arg Asp Asp Thr Ile Tyr Glu Asp Glu Asp Val Lys Glu Ala Ile  
 35 40 45

g Arg Leu Pro Glu Asn Leu Tyr Asn Asp Arg Met Phe Arg Ile Lys  
 50 55 60

g Ala Leu Asp Leu Asn Leu Lys His Gln Ile Leu Pro Lys Glu Gln  
 70 75 80

p Thr Lys Tyr Glu Glu Glu Asn Phe Tyr Leu Glu Pro Tyr Leu Lys  
 85 90 95

u Val Ile Arg Glu Arg Lys Glu Arg Glu Glu Trp Ala Lys Lys  
 100 105 110

10> 162  
 11> 106  
 12> PRT  
 13> Homo sapiens

00> 162

t Ser Ser Leu Ser Glu Tyr Ala Phe Arg Met Ser Arg Leu Ser Ala  
 5 10 15

g Leu Phe Gly Glu Val Thr Arg Pro Thr Asn Ser Lys Ser Met Lys

eolf-seql-S000001.txt

20

25

30

al Val Lys Leu Phe Ser Glu Leu Pro Leu Ala Lys Lys Lys Glu Thr  
 35 40 45

yr Asp Trp Tyr Pro Asn His His Thr Tyr Ala Glu Leu Met Gln Thr  
 50 55 60

eu Arg Phe Leu Gly Leu Tyr Arg Asp Glu His Gln Asp Phe Met Asp  
 5 70 75 80

lu Gln Lys Arg Leu Lys Lys Leu Arg Gly Lys Glu Lys Pro Lys Lys  
 85 90 95

ly Glu Gly Lys Arg Ala Ala Lys Arg Lys  
 100 105

110> 163

111> 180

112> PRT

113> Homo sapiens

100> 163

st Gly Leu Thr Ile Ser Ser Leu Phe Ser Arg Leu Phe Gly Lys Lys  
 5 10 15

n Met Arg Ile Leu Met Val Gly Leu Asp Ala Ala Gly Lys Thr Thr  
 20 25 30

e Leu Tyr Lys Leu Lys Leu Gly Glu Ile Val Thr Thr Ile Pro Thr  
 35 40 45

e Gly Phe Asn Val Glu Thr Val Glu Tyr Lys Asn Ile Cys Phe Thr  
 50 55 60

l Trp Asp Val Gly Gly Gln Asp Arg Ile Arg Pro Leu Trp Lys His  
 70 75 80

r Phe Gln Asn Thr Gln Gly Leu Ile Phe Val Val Asp Ser Asn Asp  
 85 90 95

g Glu Arg Ile Gln Glu Val Ala Asp Glu Leu Gln Lys Met Leu Leu



eolf-seql-S000001.txt

100

105

110

al Asp Glu Leu Arg Asp Ala Val Leu Leu Leu Phe Ala Asn Lys Gln  
 115 120 125

sp Leu Pro Asn Ala Met Ala Ile Ser Glu Met Thr Asp Lys Leu Gly  
 130 135 140

eu Gln Ser Leu Arg Asn Arg Thr Trp Tyr Val Gln Ala Thr Cys Ala  
 15 150 155 160

ar Gln Gly Thr Gly Leu Tyr Glu Gly Leu Asp Trp Leu Ser Asn Glu  
 165 170 175

eu Ser Lys Arg  
 180

:10> 164

:11> 1140

:12> PRT

:13> Homo sapiens

00> 164

st Ser Tyr Asn Tyr Val Val Thr Ala Gln Lys Pro Thr Ala Val Asn  
 5 10 15

y Cys Val Thr Gly His Phe Thr Ser Ala Glu Asp Leu Asn Leu Leu  
 20 25 30

e Ala Lys Asn Thr Arg Leu Glu Ile Tyr Val Val Thr Ala Glu Gly  
 35 40 45

u Arg Pro Val Lys Glu Val Gly Met Tyr Gly Lys Ile Ala Val Met  
 50 55 60

u Leu Phe Arg Pro Lys Gly Glu Ser Lys Asp Leu Leu Phe Ile Leu  
 70 75 80

r Ala Lys Tyr Asn Ala Cys Ile Leu Glu Tyr Lys Gln Ser Gly Glu  
 85 90 95

r Ile Asp Ile Ile Thr Arg Ala His Gly Asn Val Gln Asp Arg Ile

eolf-seql-S000001.txt

```

100                               105                               110

ly Arg Pro Ser Glu Thr Gly Ile Ile Gly Ile Ile Asp Pro Glu Cys
   115                               120                               125

rg Met Ile Gly Leu Arg Leu Tyr Asp Gly Leu Phe Lys Val Ile Pro
   130                               135                               140

u Asp Arg Asp Asn Lys Glu Leu Lys Ala Phe Asn Ile Arg Leu Glu
15  150                               155                               160

u Leu His Val Ile Asp Val Lys Phe Leu Tyr Gly Cys Gln Ala Pro
   165                               170                               175

r Ile Cys Phe Val Tyr Gln Asp Pro Gln Gly Arg His Val Lys Thr
   180                               185                               190

r Glu Val Ser Leu Arg Glu Lys Glu Phe Asn Lys Gly Pro Trp Lys
   195                               200                               205

n Glu Asn Val Glu Ala Glu Ala Ser Met Val Ile Ala Val Pro Glu
   210                               215                               220

o Phe Gly Gly Ala Ile Ile Ile Gly Gln Glu Ser Ile Thr Tyr His
5   230                               235                               240

n Gly Asp Lys Tyr Leu Ala Ile Ala Pro Pro Ile Ile Lys Gln Ser
   245                               250                               255

r Ile Val Cys His Asn Arg Val Asp Pro Asn Gly Ser Arg Tyr Leu
   260                               265                               270

u Gly Asp Met Glu Gly Arg Leu Phe Met Leu Leu Leu Glu Lys Glu
   275                               280                               285

u Gln Met Asp Gly Thr Val Thr Leu Lys Asp Leu Arg Val Glu Leu
   290                               295                               300

u Gly Glu Thr Ser Ile Ala Glu Cys Leu Thr Tyr Leu Asp Asn Gly
5   310                               315                               320

```

eolf-seql-S000001.txt

al Val Phe Val Gly Ser Arg Leu Gly Asp Ser Gln Leu Val Lys Leu  
                   325                  330                  335

n Val Asp Ser Asn Glu Gln Gly Ser Tyr Val Val Ala Met Glu Thr  
                   340                  345                  350

e Thr Asn Leu Gly Pro Ile Val Asp Met Cys Val Val Asp Leu Glu  
                   355                  360                  365

g Gln Gly Gln Gly Gln Leu Val Thr Cys Ser Gly Ala Phe Lys Glu  
                   370                  375                  380

y Ser Leu Arg Ile Ile Arg Asn Gly Ile Gly Ile His Glu His Ala  
 35                  390                  395                  400

r Ile Asp Leu Pro Gly Ile Lys Gly Leu Trp Pro Leu Arg Ser Asp  
                   405                  410                  415

o Asn Arg Glu Thr Tyr Asp Thr Leu Val Leu Ser Phe Val Gly Gln  
                   420                  425                  430

r Arg Val Leu Met Leu Asn Gly Glu Glu Val Glu Glu Thr Glu Leu  
                   435                  440                  445

t Gly Phe Val Asp Asp Gln Gln Thr Phe Phe Cys Gly Asn Val Ala  
                   450                  455                  460

s Gln Gln Leu Ile Gln Ile Thr Ser Ala Ser Val Arg Leu Val Ser  
 5                  470                  475                  480

n Glu Pro Lys Ala Leu Val Ser Glu Trp Lys Glu Pro Gln Ala Lys  
                   485                  490                  495

n Ile Ser Val Ala Ser Cys Asn Ser Ser Gln Val Val Val Ala Val  
                   500                  505                  510

y Arg Ala Leu Tyr Tyr Leu Gln Ile His Pro Gln Glu Leu Arg Gln  
                   515                  520                  525

e Ser His Thr Glu Met Glu His Glu Val Ala Cys Leu Asp Ile Thr  
                   530                  535                  540

## eolf-seql-S000001.txt

ro Leu Gly Asp Ser Asn Gly Leu Ser Pro Leu Cys Ala Ile Gly Leu  
 45 550 555 560

cp Thr Asp Ile Ser Ala Arg Ile Leu Lys Leu Pro Ser Phe Glu Leu  
 565 570 575

au His Lys Glu Met Leu Gly Gly Glu Ile Ile Pro Arg Ser Ile Leu  
 580 585 590

et Thr Thr Phe Glu Ser Ser His Tyr Leu Leu Cys Ala Leu Gly Asp  
 595 600 605

ly Ala Leu Phe Tyr Phe Gly Leu Asn Ile Glu Thr Gly Leu Leu Ser  
 610 615 620

sp Arg Lys Lys Val Thr Leu Gly Thr Gln Pro Thr Val Leu Arg Thr  
 625 630 635 640

ie Arg Ser Leu Ser Thr Thr Asn Val Phe Ala Cys Ser Asp Arg Pro  
 645 650 655

ir Val Ile Tyr Ser Ser Asn His Lys Leu Val Phe Ser Asn Val Asn  
 660 665 670

au Lys Glu Val Asn Tyr Met Cys Pro Leu Asn Ser Asp Gly Tyr Pro  
 675 680 685

sp Ser Leu Ala Leu Ala Asn Asn Ser Thr Leu Thr Ile Gly Thr Ile  
 690 695 700

sp Glu Ile Gln Lys Leu His Ile Arg Thr Val Pro Leu Tyr Glu Ser  
 705 710 715 720

o Arg Lys Ile Cys Tyr Gln Glu Val Ser Gln Cys Phe Gly Val Leu  
 725 730 735

r Ser Arg Ile Glu Val Gln Asp Thr Ser Gly Gly Thr Thr Ala Leu  
 740 745 750

g Pro Ser Ala Ser Thr Gln Ala Leu Ser Ser Ser Val Ser Ser Ser  
 755 760 765

## eolf-seql-S000001.txt

ys Leu Phe Ser Ser Ser Thr Ala Pro His Glu Thr Ser Phe Gly Glu  
770 775 780

lu Val Glu Val His Asn Leu Leu Ile Ile Asp Gln His Thr Phe Glu  
35 790 795 800

al Leu His Ala His Gln Phe Leu Gln Asn Glu Tyr Ala Leu Ser Leu  
805 810 815

al Ser Cys Lys Leu Gly Lys Asp Pro Asn Thr Tyr Phe Ile Val Gly  
820 825 830

ir Ala Met Val Tyr Pro Glu Glu Ala Glu Pro Lys Gln Gly Arg Ile  
835 840 845

al Val Phe Gln Tyr Ser Asp Gly Lys Leu Gln Thr Val Ala Glu Lys  
850 855 860

lu Val Lys Gly Ala Val Tyr Ser Met Val Glu Phe Asn Gly Lys Leu  
35 870 875 880

u Ala Ser Ile Asn Ser Thr Val Arg Leu Tyr Glu Trp Thr Thr Glu  
885 890 895

rs Asp Val Arg Thr Glu Cys Asn His Tyr Asn Asn Ile Met Ala Leu  
900 905 910

ir Leu Lys Thr Lys Gly Asp Phe Ile Leu Val Gly Asp Leu Met Arg  
915 920 925

ir Val Leu Leu Leu Ala Tyr Lys Pro Met Glu Gly Asn Phe Glu Glu  
930 935 940

e Ala Arg Asp Phe Asn Pro Asn Trp Met Ser Ala Val Glu Ile Leu  
5 950 955 960

p Asp Asp Asn Phe Leu Gly Ala Glu Asn Ala Phe Asn Leu Phe Val  
965 970 975

s Gln Lys Asp Ser Ala Ala Thr Thr Asp Glu Glu Arg Gln His Leu

eolf-seql-S000001.txt

980

985

990

ln Glu Val Gly Leu Phe His Leu Gly Glu Phe Val Asn Val Phe Cys  
 995 1000 1005

is Gly Ser Leu Val Met Gln Asn Leu Gly Glu Thr Ser Thr Pro  
 1010 1015 1020

ar Gln Gly Ser Val Leu Phe Gly Thr Val Asn Gly Met Ile Gly  
 1025 1030 1035

eu Val Thr Ser Leu Ser Glu Ser Trp Tyr Asn Leu Leu Leu Asp  
 1040 1045 1050

et Gln Asn Arg Leu Asn Lys Val Ile Lys Ser Val Gly Lys Ile  
 1055 1060 1065

lu His Ser Phe Trp Arg Ser Phe His Thr Glu Arg Lys Thr Glu  
 1070 1075 1080

co Ala Thr Gly Phe Ile Asp Gly Asp Leu Ile Glu Ser Phe Leu  
 1085 1090 1095

sp Ile Ser Arg Pro Lys Met Gln Glu Val Val Ala Asn Leu Gln  
 1100 1105 1110

rr Asp Asp Gly Ser Gly Met Lys Arg Glu Ala Thr Ala Asp Asp  
 1115 1120 1125

eu Ile Lys Val Val Glu Glu Leu Thr Arg Ile His  
 1130 1135 1140

110> 165

111> 153

112> PRT

113> Homo sapiens

00> 165

et Gly Ala Pro Leu Leu Ser Pro Gly Trp Gly Ala Gly Ala Ala Gly  
 5 10 15

g Arg Trp Trp Met Leu Leu Ala Pro Leu Leu Pro Ala Leu Leu Leu

eolf-seql-S000001.txt

20

25

30

al Arg Pro Ala Gly Ala Leu Val Glu Gly Leu Tyr Cys Gly Thr Arg  
 35 40 45

sp Cys Tyr Glu Val Leu Gly Val Ser Arg Ser Ala Gly Lys Ala Glu  
 50 55 60

le Ala Arg Ala Tyr Arg Gln Leu Ala Arg Arg Tyr His Pro Asp Arg  
 70 75 80

rr Arg Pro Gln Pro Gly Asp Glu Gly Pro Gly Arg Thr Pro Gln Ser  
 85 90 95

la Glu Glu Ala Phe Leu Leu Val Ala Thr Ala Tyr Glu Thr Leu Lys  
 100 105 110

al Ser Gln Ala Ala Ala Glu Leu Gln Gln Tyr Cys Met Gln Asn Ala  
 115 120 125

rs Lys Asp Ala Leu Leu Val Gly Val Pro Ala Gly Ser Asn Pro Phe  
 130 135 140

g Glu Pro Arg Ser Cys Ala Leu Leu  
 5 150

10&gt; 166

11&gt; 557

12&gt; PRT

13&gt; Homo sapiens

00&gt; 166

t Asp Gly Ile Val Pro Asp Ile Ala Val Gly Thr Lys Arg Gly Ser  
 5 10 15

p Glu Leu Phe Ser Thr Cys Val Thr Asn Gly Pro Phe Ile Met Ser  
 20 25 30

r Asn Ser Ala Ser Ala Ala Asn Gly Asn Asp Ser Lys Lys Phe Lys  
 35 40 45

y Asp Ser Arg Ser Ala Gly Val Pro Ser Arg Val Ile His Ile Arg

eolf-seql-S000001.txt

```

50                                     55                                     60

ys Leu Pro Ile Asp Val Thr Glu Gly Glu Val Ile Ser Leu Gly Leu
5                                     70                                     75                                     80

ro Phe Gly Lys Val Thr Asn Leu Leu Met Leu Lys Gly Lys Asn Gln
85                                     90                                     95

la Phe Ile Glu Met Asn Thr Glu Glu Ala Ala Asn Thr Met Val Asn
100                                     105                                     110

yr Tyr Thr Ser Val Thr Pro Val Leu Arg Gly Gln Pro Ile Tyr Ile
115                                     120                                     125

ln Phe Ser Asn His Lys Glu Leu Lys Thr Asp Ser Ser Pro Asn Gln
130                                     135                                     140

la Arg Ala Gln Ala Ala Leu Gln Ala Val Asn Ser Val Gln Ser Gly
15                                     150                                     155                                     160

sn Leu Ala Leu Ala Ala Ser Ala Ala Ala Val Asp Ala Gly Met Ala
165                                     170                                     175

st Ala Gly Gln Ser Pro Val Leu Arg Ile Ile Val Glu Asn Leu Phe
180                                     185                                     190

rr Pro Val Thr Leu Asp Val Leu His Gln Ile Phe Ser Lys Phe Gly
195                                     200                                     205

rr Val Leu Lys Ile Ile Thr Phe Thr Lys Asn Asn Gln Phe Gln Ala
210                                     215                                     220

u Leu Gln Tyr Ala Asp Pro Val Ser Ala Gln His Ala Lys Leu Ser
230                                     235                                     240

u Asp Gly Gln Asn Ile Tyr Asn Ala Cys Cys Thr Leu Arg Ile Asp
245                                     250                                     255

e Ser Lys Leu Thr Ser Leu Asn Val Lys Tyr Asn Asn Asp Lys Ser
260                                     265                                     270

```



eolf-seql-S000001.txt

```

rg Asp Tyr Thr Arg Pro Asp Leu Pro Ser Gly Asp Ser Gln Pro Ser
  275                      280                      285

au Asp Gln Thr Met Ala Ala Ala Phe Gly Ala Pro Gly Ile Ile Ser
  290                      295                      300

a Ser Pro Tyr Ala Gly Ala Gly Phe Pro Pro Thr Phe Ala Ile Pro
  305                      310                      315                      320

n Ala Ala Gly Leu Ser Val Pro Asn Val His Gly Ala Leu Ala Pro
  325                      330                      335

u Ala Ile Pro Ser Ala Ala Ala Ala Ala Ala Ala Gly Arg Ile
  340                      345                      350

a Ile Pro Gly Leu Ala Gly Ala Gly Asn Ser Val Leu Leu Val Ser
  355                      360                      365

n Leu Asn Pro Glu Arg Val Thr Pro Gln Ser Leu Phe Ile Leu Phe
  370                      375                      380

y Val Tyr Gly Asp Val Gln Arg Val Lys Ile Leu Phe Asn Lys Lys
  385                      390                      395                      400

u Asn Ala Leu Val Gln Met Ala Asp Gly Asn Gln Ala Gln Leu Ala
  405                      410                      415

t Ser His Leu Asn Gly His Lys Leu His Gly Lys Pro Ile Arg Ile
  420                      425                      430

r Leu Ser Lys His Gln Asn Val Gln Leu Pro Arg Glu Gly Gln Glu
  435                      440                      445

p Gln Gly Leu Thr Lys Asp Tyr Gly Asn Ser Pro Leu His Arg Phe
  450                      455                      460

s Lys Pro Gly Ser Lys Asn Phe Gln Asn Ile Phe Pro Pro Ser Ala
  465                      470                      475                      480

r Leu His Leu Ser Asn Ile Pro Pro Ser Val Ser Glu Glu Asp Leu
  485                      490                      495

```

## eolf-seql-S000001.txt

```

/s Val Leu Phe Ser Ser Asn Gly Gly Val Val Lys Gly Phe Lys Phe
    500                    505                    510

e Gln Lys Asp Arg Lys Met Ala Leu Ile Gln Met Gly Ser Val Glu
    515                    520                    525

u Ala Val Gln Ala Leu Ile Asp Leu His Asn His Asp Leu Gly Glu
    530                    535                    540

n His His Leu Arg Val Ser Phe Ser Lys Ser Thr Ile
 5                    550                    555

:10> 167
:11> 303
:12> PRT
:13> Homo sapiens

:00> 167

t Ala Arg Gly Lys Ala Lys Glu Glu Gly Ser Trp Lys Lys Phe Ile
    5                    10                    15

p Asn Ser Glu Lys Lys Glu Phe Leu Gly Arg Thr Gly Gly Ser Trp
    20                    25                    30

e Lys Ile Leu Leu Phe Tyr Val Ile Phe Tyr Gly Cys Leu Ala Gly
    35                    40                    45

e Phe Ile Gly Thr Ile Gln Val Met Leu Leu Thr Ile Ser Glu Phe
    50                    55                    60

s Pro Thr Tyr Gln Asp Arg Val Ala Pro Pro Gly Leu Thr Gln Ile
    70                    75                    80

o Gln Ile Gln Lys Thr Glu Ile Ser Phe Arg Pro Asn Asp Pro Lys
    85                    90                    95

r Tyr Glu Ala Tyr Val Leu Asn Ile Val Arg Phe Leu Glu Lys Tyr
    100                   105                   110

s Asp Ser Ala Gln Arg Asp Asp Met Ile Phe Glu Asp Cys Gly Asp
    115                    120                    125

```

## eolf-seql-S000001.txt

```

al Pro Ser Glu Pro Lys Glu Arg Gly Asp Phe Asn His Glu Arg Gly
  130                      135                      140

lu Arg Lys Val Cys Arg Phe Lys Leu Glu Trp Leu Gly Asn Cys Ser
  15                      150                      155                      160

.y Leu Asn Asp Glu Thr Tyr Gly Tyr Lys Glu Gly Lys Pro Cys Ile
                      165                      170                      175

.e Ile Lys Leu Asn Arg Val Leu Gly Phe Lys Pro Lys Pro Pro Lys
                      180                      185                      190

sn Glu Ser Leu Glu Thr Tyr Pro Val Met Lys Tyr Asn Pro Asn Val
                      195                      200                      205

u Pro Val Gln Cys Thr Gly Lys Arg Asp Glu Asp Lys Asp Lys Val
  210                      215                      220

.y Asn Val Glu Tyr Phe Gly Leu Gly Asn Ser Pro Gly Phe Pro Leu
  5                      230                      235                      240

n Tyr Tyr Pro Tyr Tyr Gly Lys Leu Leu Gln Pro Lys Tyr Leu Gln
                      245                      250                      255

o Leu Leu Ala Val Gln Phe Thr Asn Leu Thr Met Asp Thr Glu Ile
                      260                      265                      270

g Ile Glu Cys Lys Ala Tyr Gly Glu Asn Ile Gly Tyr Ser Glu Lys
  275                      280                      285

p Arg Phe Gln Gly Arg Phe Asp Val Lys Ile Glu Val Lys Ser
  290                      295                      300

10> 168
11> 361
12> PRT
13> Homo sapiens

00> 168

t Phe Ser Ser Val Ala His Leu Ala Arg Ala Asn Pro Phe Asn Thr
                      5                      10                      15

```

## eolf-seql-S000001.txt

```

ro His Leu Gln Leu Val His Asp Gly Leu Gly Asp Leu Arg Ser Ser
    20                      25                      30

er Pro Gly Pro Thr Gly Gln Pro Arg Arg Pro Arg Asn Leu Ala Ala
    35                      40                      45

la Ala Val Glu Glu Tyr Ser Cys Glu Phe Gly Ser Ala Lys Tyr Tyr
    50                      55                      60

la Leu Cys Gly Phe Gly Gly Val Leu Ser Cys Gly Leu Thr His Thr
    70                      75                      80

a Val Val Pro Leu Asp Leu Val Lys Cys Arg Met Gln Val Asp Pro
    85                      90                      95

n Lys Tyr Lys Gly Ile Phe Asn Gly Phe Ser Val Thr Leu Lys Glu
   100                      105                      110

p Gly Val Arg Gly Leu Ala Lys Gly Trp Ala Pro Thr Phe Leu Gly
   115                      120                      125

r Ser Met Gln Gly Leu Cys Lys Phe Gly Phe Tyr Glu Val Phe Lys
   130                      135                      140

l Leu Tyr Ser Asn Met Leu Gly Glu Glu Asn Thr Tyr Leu Trp Arg
   150                      155                      160

r Ser Leu Tyr Leu Ala Ala Ser Ala Ser Ala Glu Phe Phe Ala Asp
   165                      170                      175

e Ala Leu Ala Pro Met Glu Ala Ala Lys Val Arg Ile Gln Thr Gln
   180                      185                      190

o Gly Tyr Ala Asn Thr Leu Arg Asp Ala Ala Pro Lys Met Tyr Lys
   195                      200                      205

u Glu Gly Leu Lys Ala Phe Tyr Lys Gly Val Ala Pro Leu Trp Met
   210                      215                      220

g Gln Ile Pro Tyr Thr Met Met Lys Phe Ala Cys Phe Glu Arg Thr
   230                      235                      240

```

## eolf-seql-S000001.txt

al Glu Ala Leu Tyr Lys Phe Val Val Pro Lys Pro Arg Ser Glu Cys  
                   245                                  250                                  255

er Lys Pro Glu Gln Leu Val Val Thr Phe Val Ala Gly Tyr Ile Ala  
                   260                                  265                                  270

y Val Phe Cys Ala Ile Val Ser His Pro Ala Asp Ser Val Val Ser  
                   275                                  280                                  285

al Leu Asn Lys Glu Lys Gly Ser Ser Ala Ser Leu Val Leu Lys Arg  
                   290                                  295                                  300

u Gly Phe Lys Gly Val Trp Lys Gly Leu Phe Ala Arg Ile Ile Met  
   15                                  310                                  315                                  320

e Gly Thr Leu Thr Ala Leu Gln Trp Phe Ile Tyr Asp Ser Val Lys  
                   325                                  330                                  335

al Tyr Phe Arg Leu Pro Arg Pro Pro Pro Pro Glu Met Pro Glu Ser  
                   340                                  345                                  350

u Lys Lys Lys Leu Gly Leu Thr Gln  
                   355                                  360

10> 169  
 11> 369  
 12> PRT  
 13> Homo sapiens

00> 169

t Asp Pro Arg Lys Val Asn Glu Leu Arg Ala Phe Val Lys Met Cys  
                   5                                  10                                  15

s Gln Asp Pro Ser Val Leu His Thr Glu Glu Met Arg Phe Leu Arg  
                   20                                  25                                  30

u Trp Val Glu Ser Met Gly Gly Lys Val Pro Pro Ala Thr Gln Lys  
                   35                                  40                                  45

a Lys Ser Glu Glu Asn Thr Lys Glu Glu Lys Pro Asp Ser Lys Lys  
                   50                                  55                                  60

## eolf-seql-S000001.txt

```

1  Glu Glu Asp Leu Lys Ala Asp Glu Pro Ser Ser Glu Glu Ser Asp
   70                               75                               80
2  Glu Ile Asp Lys Glu Gly Val Ile Glu Pro Asp Thr Asp Ala Pro
   85                               90                               95
3  Glu Met Gly Asp Glu Asn Ala Glu Ile Thr Glu Glu Met Met Asp
   100                            105                            110
4  Ala Asn Asp Lys Lys Val Ala Ala Ile Glu Ala Leu Asn Asp Gly
   115                            120                            125
5  Leu Gln Lys Ala Ile Asp Leu Phe Thr Asp Ala Ile Lys Leu Asn
   130                            135                            140
6  Arg Leu Ala Ile Leu Tyr Ala Lys Arg Ala Ser Val Phe Val Lys
   150                            155                            160
7  Gln Lys Pro Asn Ala Ala Ile Arg Asp Cys Asp Arg Ala Ile Glu
   165                            170                            175
8  Asn Pro Asp Ser Ala Gln Pro Tyr Lys Trp Arg Gly Lys Ala His
   180                            185                            190
9  Leu Leu Gly His Trp Glu Glu Ala Ala His Asp Leu Ala Leu Ala
   195                            200                            205
10 Lys Leu Asp Tyr Asp Glu Asp Ala Ser Ala Met Leu Lys Glu Val
   210                            215                            220
11 Pro Arg Ala Gln Lys Ile Ala Glu His Arg Arg Lys Tyr Glu Arg
   230                            235                            240
12 Arg Glu Glu Arg Glu Ile Lys Glu Arg Ile Glu Arg Val Lys Lys
   245                            250                            255
13 Arg Glu Glu His Glu Arg Ala Gln Arg Glu Glu Glu Ala Arg Arg
   260                            265                            270
14 Ser Gly Ala Gln Tyr Gly Ser Phe Pro Gly Gly Phe Pro Gly Gly

```

eolf-seql-S000001.txt

275

280

285

at Pro Gly Asn Phe Pro Gly Gly Met Pro Gly Met Gly Gly Gly Met  
 290 295 300

ro Gly Met Ala Gly Met Pro Gly Leu Asn Glu Ile Leu Ser Asp Pro  
 305 310 315 320

lu Val Leu Ala Ala Met Gln Asp Pro Glu Val Met Val Ala Phe Gln  
 325 330 335

sp Val Ala Gln Asn Pro Ala Asn Met Ser Lys Tyr Gln Ser Asn Pro  
 340 345 350

ys Val Met Asn Leu Ile Ser Lys Leu Ser Ala Lys Phe Gly Gly Gln  
 355 360 365

.a

:10> 170  
 :11> 440  
 :12> PRT  
 :13> Homo sapiens

:20>  
 :21> misc\_feature  
 :22> (21)..(21)  
 :23> Xaa can be any naturally occurring amino acid

:00> 170

at Glu Tyr Gln Ile Leu Lys Met Ser Leu Cys Leu Phe Ile Leu Leu  
 5 10 15

le Leu Thr Pro Xaa Ile Leu Cys Ile Cys Pro Leu Gln Cys Ile Cys  
 20 25 30

er Glu Arg His Arg His Val Asp Cys Ser Gly Arg Asn Leu Ser Thr  
 35 40 45

u Pro Ser Gly Leu Gln Glu Asn Ile Ile His Leu Asn Leu Ser Tyr  
 50 55 60

## eolf-seql-S000001.txt

```

sn His Phe Thr Asp Leu His Asn Gln Leu Thr Gln Tyr Thr Asn Leu
5                               70                               75                               80

rg Thr Leu Asp Ile Ser Asn Asn Arg Leu Glu Ser Leu Pro Ala His
85                               90                               95

au Pro Arg Ser Leu Trp Asn Met Ser Ala Ala Asn Asn Asn Ile Lys
100                             105                             110

au Leu Asp Lys Ser Asp Thr Ala Tyr Gln Trp Asn Leu Lys Tyr Leu
115                             120                             125

sp Val Ser Lys Asn Met Leu Glu Lys Val Val Leu Ile Lys Asn Thr
130                             135                             140

au Arg Ser Leu Glu Val Leu Asn Leu Ser Ser Asn Lys Leu Trp Thr
15                             150                             155                             160

al Pro Thr Asn Met Pro Ser Lys Leu His Ile Val Asp Leu Ser Asn
165                             170                             175

n Ser Leu Thr Gln Ile Leu Pro Gly Thr Leu Ile Asn Leu Thr Asn
180                             185                             190

u Thr His Leu Tyr Leu His Asn Asn Lys Phe Thr Phe Ile Pro Asp
195                             200                             205

n Ser Phe Asp Gln Leu Phe Gln Leu Gln Glu Ile Thr Leu Tyr Asn
210                             215                             220

n Arg Trp Ser Cys Asp His Lys Gln Asn Ile Thr Tyr Leu Leu Lys
5                               230                             235                             240

p Met Met Glu Thr Lys Ala His Val Ile Gly Thr Pro Cys Ser Thr
245                             250                             255

n Ile Ser Ser Leu Lys Glu His Asn Met Tyr Pro Thr Pro Ser Gly
260                             265                             270

e Thr Ser Ser Leu Phe Thr Val Ser Gly Met Gln Thr Val Asp Thr
275                             280                             285

```



eolf-seql-S000001.txt

le Asn Ser Leu Ser Val Val Thr Gln Pro Lys Val Thr Lys Ile Pro  
 290 295 300

ys Gln Tyr Arg Thr Lys Glu Thr Thr Phe Gly Ala Thr Leu Ser Lys  
 305 310 315 320

sp Thr Thr Phe Thr Ser Thr Asp Lys Ala Phe Val Pro Tyr Pro Glu  
 325 330 335

sp Thr Ser Thr Glu Thr Ile Asn Ser His Glu Ala Ala Ala Thr  
 340 345 350

au Thr Ile His Leu Gln Asp Gly Met Val Thr Asn Thr Ser Leu Thr  
 355 360 365

er Ser Thr Lys Ser Ser Pro Thr Pro Met Thr Leu Ser Ile Thr Ser  
 370 375 380

ly Met Pro Asn Asn Phe Ser Glu Met Pro Gln Gln Ser Thr Thr Leu  
 385 390 395 400

an Leu Trp Arg Glu Glu Thr Thr Thr Asn Val Lys Thr Pro Leu Pro  
 405 410 415

er Val Ala Asn Ala Trp Lys Val Asn Ala Ser Phe Leu Leu Leu Leu  
 420 425 430

n Val Val Val Met Leu Ala Val  
 435 440

10> 171  
 11> 241  
 12> PRT  
 13> Homo sapiens

00> 171

t Leu Ser Ser Thr Ala Met Tyr Ser Ala Pro Gly Arg Asp Leu Gly  
 5 10 15

t Glu Pro His Arg Ala Ala Gly Pro Leu Gln Leu Arg Phe Ser Pro  
 20 25 30

## eolf-seql-S000001.txt

```

r Val Phe Asn Gly Gly Thr Ile Leu Ala Ile Ala Gly Glu Asp Phe
  35                                40                                45

la Ile Val Ala Ser Asp Thr Arg Leu Ser Glu Gly Phe Ser Ile His
  50                                55                                60

r Arg Asp Ser Pro Lys Cys Tyr Lys Leu Thr Asp Lys Thr Val Ile
  70                                75                                80

y Cys Ser Gly Phe His Gly Asp Cys Leu Thr Leu Thr Lys Ile Ile
  85                                90                                95

u Ala Arg Leu Lys Met Tyr Lys His Ser Asn Asn Lys Ala Met Thr
 100                                105                                110

r Gly Ala Ile Ala Ala Met Leu Ser Thr Ile Leu Tyr Ser Arg Arg
 115                                120                                125

e Phe Pro Tyr Tyr Val Tyr Asn Ile Ile Gly Gly Leu Asp Glu Glu
 130                                135                                140

y Lys Gly Ala Val Tyr Ser Phe Asp Pro Val Gly Ser Tyr Gln Arg
  5                                150                                155                                160

p Ser Phe Lys Ala Gly Gly Ser Ala Ser Ala Met Leu Gln Pro Leu
 165                                170                                175

u Asp Asn Gln Val Gly Phe Lys Asn Met Gln Asn Val Glu His Val
 180                                185                                190

o Leu Ser Leu Asp Arg Ala Met Arg Leu Val Lys Asp Val Phe Ile
 195                                200                                205

r Ala Ala Glu Arg Asp Val Tyr Thr Gly Asp Ala Leu Arg Ile Cys
 210                                215                                220

e Val Thr Lys Glu Gly Ile Arg Glu Glu Thr Val Ser Leu Arg Lys
  5                                230                                235                                240

```

p

eolf-seql-S000001.txt

!10> 172  
 !11> 83  
 !12> PRT  
 !13> Homo sapiens

:00> 172

t Gln Asn Asp Ala Gly Glu Phe Val Asp Leu Tyr Val Pro Arg Lys  
                   5                  10                  15

's Ser Ala Ser Asn Arg Ile Ile Gly Ala Lys Asp His Ala Ser Ile  
                   20                  25                  30

n Met Asn Val Ala Glu Val Asp Lys Val Thr Gly Arg Phe Asn Gly  
                   35                  40                  45

n Phe Lys Thr Tyr Ala Ile Cys Gly Ala Ile Arg Arg Met Gly Glu  
                   50                  55                  60

r Asp Asp Ser Ile Leu Arg Leu Ala Lys Ala Asp Gly Ile Val Ser  
                   70                  75                  80

s Asn Phe

10> 173  
 11> 660  
 12> PRT  
 13> Homo sapiens

00> 173

t Glu Ala Leu Met Ala Arg Gly Ala Leu Thr Gly Pro Leu Arg Ala  
                   5                  10                  15

u Cys Leu Leu Gly Cys Leu Leu Ser His Ala Ala Ala Ala Pro Ser  
                   20                  25                  30

o Ile Ile Lys Phe Pro Gly Asp Val Ala Pro Lys Thr Asp Lys Glu  
                   35                  40                  45

l Ala Val Gln Tyr Leu Asn Thr Phe Tyr Gly Cys Pro Lys Glu Ser  
                   50                  55                  60

## eolf-seql-S000001.txt

/s Asn Leu Phe Val Leu Lys Asp Thr Leu Lys Lys Met Gln Lys Phe  
 5 70 75 80

ie Gly Leu Pro Gln Thr Gly Asp Leu Asp Gln Asn Thr Ile Glu Thr  
 85 90 95

et Arg Lys Pro Arg Cys Gly Asn Pro Asp Val Ala Asn Tyr Asn Phe  
 100 105 110

ie Pro Arg Lys Pro Lys Trp Asp Lys Asn Gln Ile Thr Tyr Arg Ile  
 115 120 125

ie Gly Tyr Thr Pro Asp Leu Asp Pro Glu Thr Val Asp Asp Ala Phe  
 130 135 140

ia Arg Ala Phe Gln Val Trp Ser Asp Val Thr Pro Leu Arg Phe Ser  
 15 150 155 160

ig Ile His Asp Gly Glu Ala Asp Ile Met Ile Asn Phe Gly Arg Trp  
 165 170 175

u His Gly Asp Gly Tyr Pro Phe Asp Gly Lys Asp Gly Leu Leu Ala  
 180 185 190

s Ala Phe Ala Pro Gly Thr Gly Val Gly Gly Asp Ser His Phe Asp  
 195 200 205

p Asp Glu Leu Trp Thr Leu Gly Glu Gly Gln Val Val Arg Val Lys  
 210 215 220

r Gly Asn Ala Asp Gly Glu Tyr Cys Lys Phe Pro Phe Leu Phe Asn  
 5 230 235 240

y Lys Glu Tyr Asn Ser Cys Thr Asp Thr Gly Arg Ser Asp Gly Phe  
 245 250 255

u Trp Cys Ser Thr Thr Tyr Asn Phe Glu Lys Asp Gly Lys Tyr Gly  
 260 265 270

e Cys Pro His Glu Ala Leu Phe Thr Met Gly Gly Asn Ala Glu Gly

eolf-seql-S000001.txt

275

280

285

ln Pro Cys Lys Phe Pro Phe Arg Phe Gln Gly Thr Ser Tyr Asp Ser  
 290 295 300  
 /s Thr Thr Glu Gly Arg Thr Asp Gly Tyr Arg Trp Cys Gly Thr Thr  
 310 315 320  
 u Asp Tyr Asp Arg Asp Lys Lys Tyr Gly Phe Cys Pro Glu Thr Ala  
 325 330 335  
 t Ser Thr Val Gly Gly Asn Ser Glu Gly Ala Pro Cys Val Phe Pro  
 340 345 350  
 ie Thr Phe Leu Gly Asn Lys Tyr Glu Ser Cys Thr Ser Ala Gly Arg  
 355 360 365  
 r Asp Gly Lys Met Trp Cys Ala Thr Thr Ala Asn Tyr Asp Asp Asp  
 370 375 380  
 g Lys Trp Gly Phe Cys Pro Asp Gln Gly Tyr Ser Leu Phe Leu Val  
 390 395 400  
 a Ala His Glu Phe Gly His Ala Met Gly Leu Glu His Ser Gln Asp  
 405 410 415  
 o Gly Ala Leu Met Ala Pro Ile Tyr Thr Tyr Thr Lys Asn Phe Arg  
 420 425 430  
 u Ser Gln Asp Asp Ile Lys Gly Ile Gln Glu Leu Tyr Gly Ala Ser  
 435 440 445  
 o Asp Ile Asp Leu Gly Thr Gly Pro Thr Pro Thr Leu Gly Pro Val  
 450 455 460  
 r Pro Glu Ile Cys Lys Gln Asp Ile Val Phe Asp Gly Ile Ala Gln  
 470 475 480  
 e Arg Gly Glu Ile Phe Phe Phe Lys Asp Arg Phe Ile Trp Arg Thr  
 485 490 495

eolf-seql-S000001.txt

1 Thr Pro Arg Asp Lys Pro Met Gly Pro Leu Leu Val Ala Thr Phe  
                   500                  505                  510

p Pro Glu Leu Pro Glu Lys Ile Asp Ala Val Tyr Glu Ala Pro Gln  
           515                  520                  525

u Glu Lys Ala Val Phe Phe Ala Gly Asn Glu Tyr Trp Ile Tyr Ser  
       530                  535                  540

a Ser Thr Leu Glu Arg Gly Tyr Pro Lys Pro Leu Thr Ser Leu Gly  
  5                  550                  555                  560

u Pro Pro Asp Val Gln Arg Val Asp Ala Ala Phe Asn Trp Ser Lys  
           565                  570                  575

n Lys Lys Thr Tyr Ile Phe Ala Gly Asp Lys Phe Trp Arg Tyr Asn  
           580                  585                  590

u Val Lys Lys Lys Met Asp Pro Gly Phe Pro Lys Leu Ile Ala Asp  
           595                  600                  605

a Trp Asn Ala Ile Pro Asp Asn Leu Asp Ala Val Val Asp Leu Gln  
       610                  615                  620

y Gly Gly His Ser Tyr Phe Phe Lys Gly Ala Tyr Tyr Leu Lys Leu  
  5                  630                  635                  640

u Asn Gln Ser Leu Lys Ser Val Lys Phe Gly Ser Ile Lys Ser Asp  
           645                  650                  655

p Leu Gly Cys  
           660

10> 174

11> 245

12> PRT

13> Homo sapiens

00> 174

t Asp Lys Asn Glu Leu Val Gln Lys Ala Lys Leu Ala Glu Gln Ala  
           5                  10                  15

## eolf-seql-S000001.txt

u Arg Tyr Asp Asp Met Ala Ala Cys Met Lys Ser Val Thr Glu Gln  
           20                          25                          30

y Ala Glu Leu Ser Asn Glu Glu Arg Asn Leu Leu Ser Val Ala Tyr  
           35                          40                          45

s Asn Val Val Gly Ala Arg Arg Ser Ser Trp Arg Val Val Ser Ser  
       50                          55                          60

e Glu Gln Lys Thr Glu Gly Ala Glu Lys Lys Gln Gln Met Ala Arg  
                           70                          75                          80

u Tyr Arg Glu Lys Ile Glu Thr Glu Leu Arg Asp Ile Cys Asn Asp  
                           85                          90                          95

l Leu Ser Leu Leu Glu Lys Phe Leu Ile Pro Asn Ala Ser Gln Ala  
           100                          105                          110

u Ser Lys Val Phe Tyr Leu Lys Met Lys Gly Asp Tyr Tyr Arg Tyr  
           115                          120                          125

u Ala Glu Val Ala Ala Gly Asp Asp Lys Lys Gly Ile Val Asp Gln  
       130                          135                          140

r Gln Gln Ala Tyr Gln Glu Ala Phe Glu Ile Ser Lys Lys Glu Met  
   5                          150                          155                          160

n Pro Thr His Pro Ile Arg Leu Gly Leu Ala Leu Asn Phe Ser Val  
                           165                          170                          175

e Tyr Tyr Glu Ile Leu Asn Ser Pro Glu Lys Ala Cys Ser Leu Ala  
           180                          185                          190

s Thr Ala Phe Asp Glu Ala Ile Ala Glu Leu Asp Thr Leu Ser Glu  
       195                          200                          205

u Ser Tyr Lys Asp Ser Thr Leu Ile Met Gln Leu Leu Arg Asp Asn  
       210                          215                          220

u Thr Leu Trp Thr Ser Asp Thr Gln Gly Asp Glu Ala Glu Ala Gly  
   5                          230                          235                          240

eolf-seql-S000001.txt

u Gly Gly Glu Asn  
245

!10> 175  
!11> 173  
!12> PRT  
!13> Homo sapiens

!00> 175

t Ser Thr Met Gly Asn Glu Ala Ser Tyr Pro Ala Glu Met Cys Ser  
5 10 15

s Phe Asp Asn Asp Glu Ile Lys Arg Leu Gly Arg Arg Phe Lys Lys  
20 25 30

u Asp Leu Asp Lys Ser Gly Ser Leu Ser Val Glu Glu Phe Met Ser  
35 40 45

u Pro Glu Leu Arg His Asn Pro Leu Val Arg Arg Val Ile Asp Val  
50 55 60

e Asp Thr Asp Gly Asp Gly Glu Val Asp Phe Lys Glu Phe Ile Leu  
70 75 80

y Thr Ser Gln Phe Ser Val Lys Gly Asp Glu Glu Gln Lys Leu Arg  
85 90 95

e Ala Phe Ser Ile Tyr Asp Met Asp Lys Asp Gly Tyr Ile Ser Asn  
100 105 110

y Glu Leu Phe Gln Val Leu Lys Met Met Val Gly Asn Asn Leu Thr  
115 120 125

p Trp Gln Leu Gln Gln Leu Val Asp Lys Thr Ile Ile Ile Leu Asp  
130 135 140

s Asp Gly Asp Gly Lys Ile Ser Phe Glu Glu Phe Ser Ala Val Val  
5 150 155 160

g Asp Leu Glu Ile His Lys Lys Leu Val Leu Ile Val  
165 170



## eolf-seql-S000001.txt

```

10> 176
11> 907
12> PRT
13> Homo sapiens

100> 176

t Thr Ala Val His Ala Gly Asn Ile Asn Phe Lys Trp Asp Pro Lys
      5                      10                      15

r Leu Glu Ile Arg Thr Leu Ala Val Glu Arg Leu Leu Glu Pro Leu
      20                      25                      30

l Thr Gln Val Thr Thr Leu Val Asn Thr Asn Ser Lys Gly Pro Ser
      35                      40                      45

n Lys Lys Arg Gly Arg Ser Lys Lys Ala His Val Leu Ala Ala Ser
      50                      55                      60

l Glu Gln Ala Thr Glu Asn Phe Leu Glu Lys Gly Asp Lys Ile Ala
      70                      75                      80

s Glu Ser Gln Phe Leu Lys Glu Glu Leu Val Val Ala Val Glu Asp
      85                      90                      95

l Arg Lys Gln Gly Asp Leu Met Lys Ala Ala Ala Gly Glu Phe Ala
      100                     105                     110

p Asp Pro Cys Ser Ser Val Lys Arg Gly Asn Met Val Arg Ala Ala
      115                     120                     125

g Ala Leu Leu Ser Ala Val Thr Arg Leu Leu Ile Leu Ala Asp Met
      130                     135                     140

a Asp Val Tyr Lys Leu Leu Val Gln Leu Lys Val Val Glu Asp Gly
      150                     155                     160

e Leu Lys Leu Arg Asn Ala Gly Asn Glu Gln Asp Leu Gly Asn Gln
      165                     170                     175

r Lys Ala Leu Lys Pro Glu Val Asp Lys Leu Asn Ile Met Ala Ala
      180                     185                     190

```

## eolf-seql-S000001.txt

ys Arg Gln Gln Glu Leu Lys Asp Val Gly His Arg Asp Gln Met Ala  
 195 200 205  
 la Ala Arg Gly Ile Leu Gln Ser Asn Val Pro Ile Leu Tyr Thr Ala  
 210 215 220  
 er Gln Ala Cys Leu Gln His Pro Asp Val Ala Ala Tyr Lys Ala Asn  
 225 230 235 240  
 rg Asp Leu Ile Tyr Lys Gln Leu Gln Gln Ala Val Thr Gly Ile Ser  
 245 250 255  
 sn Ala Ala Gln Ala Thr Ala Ser Asp Asp Ala Ser Gln His Gln Gly  
 260 265 270  
 y Gly Gly Gly Glu Leu Ala Tyr Ala Leu Asn Asn Phe Asp Lys Gln  
 275 280 285  
 e Ile Val Asp Pro Leu Ser Phe Ser Glu Glu Arg Phe Arg Pro Ser  
 290 295 300  
 u Glu Glu Arg Leu Glu Ser Ile Ile Ser Gly Ala Ala Leu Met Ala  
 305 310 315 320  
 p Ser Ser Cys Thr Arg Asp Asp Arg Arg Glu Arg Ile Val Ala Glu  
 325 330 335  
 s Asn Ala Val Arg Gln Ala Cys Arg Thr Cys Val Ser Glu Tyr Met  
 340 345 350  
 y Asn Ala Gly Arg Lys Glu Arg Ser Asp Ala Leu Asn Ser Ala Ile  
 355 360 365  
 p Lys Met Thr Lys Lys Thr Arg Asp Leu Arg Arg Gln Leu Arg Lys  
 370 375 380  
 a Val Met Asp His Val Ser Asp Ser Phe Leu Glu Thr Asn Val Pro  
 385 390 395 400  
 u Leu Val Leu Ile Glu Ala Ala Lys Asn Gly Asn Glu Lys Glu Val  
 405 410 415

eolf-seql-S000001.txt

ys Glu Tyr Ala Gln Val Phe Arg Glu His Ala Asn Lys Leu Ile Glu  
420 425 430

al Ala Asn Leu Ala Cys Ser Ile Ser Asn Asn Glu Glu Gly Val Lys  
435 440 445

eu Val Arg Met Ser Ala Ser Gln Leu Glu Ala Gly Cys Pro Gln Val  
450 455 460

le Asn Ala Ala Thr Trp Ala Leu Ala Pro Lys Pro Gln Ser Lys Leu  
465 470 475 480

la Gln Glu Asn Met Asp Leu Phe Lys Glu Gln Trp Glu Lys Gln Val  
485 490 495

ag Val Leu Thr Asp Ala Val Asp Asp Ile Thr Ser Ile Asp Asp Phe  
500 505 510

eu Ala Val Ser Glu Asn His Ile Leu Glu Asp Val Asn Lys Cys Val  
515 520 525

le Ala Leu Gln Glu Lys Asp Val Asp Gly Leu Asp Arg Thr Ala Gly  
530 535 540

la Ile Arg Gly Arg Ala Ala Arg Val Ile His Val Val Thr Ser Glu  
545 550 555 560

st Asp Asn Tyr Glu Pro Gly Val Tyr Thr Glu Lys Val Leu Glu Ala  
565 570 575

lr Lys Leu Leu Ser Asn Thr Val Met Pro Arg Phe Thr Glu Gln Val  
580 585 590

u Ala Ala Val Glu Ala Leu Ser Ser Asp Pro Ala Gln Pro Met Asp  
595 600 605

u Asn Glu Phe Ile Asp Ala Ser Arg Leu Val Tyr Asp Gly Ile Arg  
610 615 620

p Ile Arg Lys Ala Val Leu Met Ile Arg Thr Pro Glu Glu Leu Asp

eolf-seql-S000001.txt  
 5 630 635 640  
 p Ser Asp Phe Glu Thr Glu Asp Phe Asp Val Arg Ser Glu Thr Ser  
 645 650 655  
 l Gln Thr Glu Asp Asp Gln Leu Ile Ala Gly Gln Ser Ala Arg Ala  
 660 665 670  
 e Met Ala Gln Leu Pro Gln Glu Gln Lys Ala Lys Ile Arg Glu Gln  
 675 680 685  
 l Ala Ser Phe Gln Glu Glu Lys Ser Lys Leu Asp Ala Glu Val Ser  
 690 695 700  
 s Trp Asp Asp Ser Gly Asn Asp Ile Ile Val Leu Ala Lys Gln Met  
 5 710 715 720  
 s Met Ile Met Met Glu Met Thr Asp Phe Thr Arg Gly Lys Gly Pro  
 725 730 735  
 u Lys Asn Thr Ser Asp Val Ile Ser Ala Ala Lys Lys Ile Ala Glu  
 740 745 750  
 a Gly Ser Arg Met Asp Lys Leu Gly Arg Thr Ile Arg Asp His Cys  
 755 760 765  
 o Asp Ser Ala Cys Lys Gln Asp Leu Leu Ala Tyr Leu Gln Arg Ile  
 770 775 780  
 a Leu Tyr Cys His Gln Leu Asn Ile Cys Ser Lys Val Lys Ala Glu  
 5 790 795 800  
 l Gln Asn Leu Gly Gly Glu Leu Val Val Ser Gly Val Asp Ser Ala  
 805 810 815  
 : Ser Leu Ile Gln Ala Ala Lys Asn Leu Met Asn Ala Val Val Gln  
 820 825 830  
 : Val Lys Ala Ser Tyr Val Ala Ser Thr Lys Tyr Gln Lys Ser Gln  
 835 840 845

eolf-seql-S000001.txt

ly Met Ala Ser Leu Asn Leu Pro Ala Val Ser Met Lys Met Lys Ala  
 850 855 860

ro Glu Lys Lys Pro Leu Val Lys Arg Glu Lys Gln Asp Glu Thr Gln  
 870 875 880

ir Lys Ile Lys Arg Ala Ser Gln Lys Lys His Val Asn Pro Val Gln  
 885 890 895

la Leu Ser Glu Phe Lys Ala Met Asp Ser Ile  
 900 905

!10> 177

!11> 176

!12> PRT

!13> Homo sapiens

!00> 177

st Thr Met Cys Ser Gly Ala Arg Leu Ala Leu Leu Val Tyr Gly Ile  
 5 10 15

le Met His Ser Ser Val Tyr Ser Ser Pro Ala Ala Ala Gly Leu Arg  
 20 25 30

le Pro Gly Ile Arg Pro Glu Glu Glu Ala Tyr Gly Glu Asp Gly Asn  
 35 40 45

o Leu Pro Asp Phe Gly Gly Ser Glu Pro Pro Gly Ala Gly Ser Pro  
 50 55 60

a Ser Ala Pro Arg Ala Ala Ala Ala Trp Tyr Arg Pro Ala Gly Arg  
 70 75 80

g Asp Val Ala His Gly Ile Leu Asn Glu Ala Tyr Arg Lys Val Leu  
 85 90 95

p Gln Leu Ser Ala Gly Lys His Leu Gln Ser Leu Val Ala Arg Gly  
 100 105 110

l Gly Gly Ser Leu Gly Gly Gly Ala Gly Asp Asp Ala Glu Pro Leu  
 115 120 125

eolf-seql-S000001.txt

er Lys Arg His Ser Asp Gly Ile Phe Thr Asp Ser Tyr Ser Arg Tyr  
 130 135 140

g Lys Gln Met Ala Val Lys Lys Tyr Leu Ala Ala Val Leu Gly Lys  
 15 150 155 160

g Tyr Lys Gln Arg Val Lys Asn Lys Gly Arg Arg Ile Ala Tyr Leu  
 165 170 175

110> 178

111> 298

112> PRT

113> Homo sapiens

100> 178

et Ser Leu Tyr Pro Ser Leu Glu Asp Leu Lys Val Asp Lys Val Ile  
 5 10 15

n Ala Gln Thr Ala Phe Ser Ala Asn Pro Ala Asn Pro Ala Ile Leu  
 20 25 30

r Glu Ala Ser Ala Pro Ile Pro His Asp Gly Asn Leu Tyr Pro Arg  
 35 40 45

u Tyr Pro Glu Leu Ser Gln Tyr Met Gly Leu Ser Leu Asn Glu Glu  
 50 55 60

u Ile Arg Ala Ser Val Ala Val Val Ser Gly Ala Pro Leu Gln Gly  
 70 75 80

n Leu Val Ala Arg Pro Ser Ser Ile Asn Tyr Met Val Ala Pro Val  
 85 90 95

r Gly Asn Asp Val Gly Ile Arg Arg Ala Glu Ile Lys Gln Gly Ile  
 100 105 110

g Glu Val Ile Leu Cys Lys Asp Gln Asp Gly Lys Ile Gly Leu Arg  
 115 120 125

u Lys Ser Ile Asp Asn Gly Ile Phe Val Gln Leu Val Gln Ala Asn  
 130 135 140

eolf-seql-S000001.txt

er Pro Ala Ser Leu Val Gly Leu Arg Phe Gly Asp Gln Val Leu Gln  
 15 150 155 160

e Asn Gly Glu Asn Cys Ala Gly Trp Ser Ser Asp Lys Ala His Lys  
 165 170 175

al Leu Lys Gln Ala Phe Gly Glu Lys Ile Thr Met Thr Ile Arg Asp  
 180 185 190

g Pro Phe Glu Arg Thr Ile Thr Met His Lys Asp Ser Thr Gly His  
 195 200 205

al Gly Phe Ile Phe Lys Asn Gly Lys Ile Thr Ser Ile Val Lys Asp  
 210 215 220

er Ser Ala Ala Arg Asn Gly Leu Leu Thr Glu His Asn Ile Cys Glu  
 230 235 240

e Asn Gly Gln Asn Val Ile Gly Leu Lys Asp Ser Gln Ile Ala Asp  
 245 250 255

e Leu Ser Thr Ser Gly Thr Val Val Thr Ile Thr Ile Met Pro Ala  
 260 265 270

e Ile Phe Glu His Ile Ile Lys Arg Met Ala Pro Ser Ile Met Lys  
 275 280 285

r Leu Met Asp His Thr Ile Pro Glu Val  
 290 295

10> 179

11> 1621

12> PRT

13> Homo sapiens

00> 179

t Ala Lys Ser Gly Gly Cys Gly Ala Gly Ala Gly Val Gly Gly Gly  
 5 10 15

n Gly Ala Leu Thr Trp Val Asn Asn Ala Ala Lys Lys Glu Glu Ser  
 20 25 30

eolf-seql-S000001.txt

u Thr Ala Asn Lys Asn Asp Ser Ser Lys Lys Leu Ser Val Glu Arg  
 35 40 45

l Tyr Gln Lys Lys Thr Gln Leu Glu His Ile Leu Leu Arg Pro Asp  
 50 55 60

r Tyr Ile Gly Ser Val Glu Pro Leu Thr Gln Phe Met Trp Val Tyr  
 70 75 80

p Glu Asp Val Gly Met Asn Cys Arg Glu Val Thr Phe Val Pro Gly  
 85 90 95

u Tyr Lys Ile Phe Asp Glu Ile Leu Val Asn Ala Ala Asp Asn Lys  
 100 105 110

n Arg Asp Lys Asn Met Thr Cys Ile Lys Val Ser Ile Asp Pro Glu  
 115 120 125

r Asn Ile Ile Ser Ile Trp Asn Asn Gly Lys Gly Ile Pro Val Val  
 130 135 140

u His Lys Val Glu Lys Val Tyr Val Pro Ala Leu Ile Phe Gly Gln  
 150 155 160

u Leu Thr Ser Ser Asn Tyr Asp Asp Asp Glu Lys Lys Val Thr Gly  
 165 170 175

y Arg Asn Gly Tyr Gly Ala Lys Leu Cys Asn Ile Phe Ser Thr Lys  
 180 185 190

e Thr Val Glu Thr Ala Cys Lys Glu Tyr Lys His Ser Phe Lys Gln  
 195 200 205

r Trp Met Asn Asn Met Met Lys Thr Ser Glu Ala Lys Ile Lys His  
 210 215 220

e Asp Gly Glu Asp Tyr Thr Cys Ile Thr Phe Gln Pro Asp Leu Ser  
 230 235 240

s Phe Lys Met Glu Lys Leu Asp Lys Asp Ile Val Ala Leu Met Thr  
 245 250 255



## eolf-seql-S000001.txt

```

rg Arg Ala Tyr Asp Leu Ala Gly Ser Cys Arg Gly Val Lys Val Met
    260                265                270

e Asn Gly Lys Lys Leu Pro Val Asn Gly Phe Arg Ser Tyr Val Asp
    275                280                285

u Tyr Val Lys Asp Lys Leu Asp Glu Thr Gly Val Ala Leu Lys Val
    290                295                300

e His Glu Leu Ala Asn Glu Arg Trp Asp Val Cys Leu Thr Leu Ser
  5          310                315                320

u Lys Gly Phe Gln Gln Ile Ser Phe Val Asn Ser Ile Ala Thr Thr
    325                330                335

s Gly Gly Arg His Val Asp Tyr Val Val Asp Gln Val Val Gly Lys
    340                345                350

u Ile Glu Val Val Lys Lys Lys Asn Lys Ala Gly Val Ser Val Lys
    355                360                365

o Phe Gln Val Lys Asn His Ile Trp Val Phe Ile Asn Cys Leu Ile
    370                375                380

u Asn Pro Thr Phe Asp Ser Gln Thr Lys Glu Asn Met Thr Leu Gln
  5          390                395                400

o Lys Ser Phe Gly Ser Lys Cys Gln Leu Ser Glu Lys Phe Phe Lys
    405                410                415

a Ala Ser Asn Cys Gly Ile Val Glu Ser Ile Leu Asn Trp Val Lys
    420                425                430

e Lys Ala Gln Thr Gln Leu Asn Lys Lys Cys Ser Ser Val Lys Tyr
    435                440                445

r Lys Ile Lys Gly Ile Pro Lys Leu Asp Asp Ala Asn Asp Ala Gly
    450                455                460

y Lys His Ser Leu Glu Cys Thr Leu Ile Leu Thr Glu Gly Asp Ser
  5          470                475                480

```

## eolf-seql-S000001.txt

a Lys Ser Leu Ala Val Ser Gly Leu Gly Val Ile Gly Arg Asp Arg  
                   485                                  490                                  495

r Gly Val Phe Pro Leu Arg Gly Lys Ile Leu Asn Val Arg Glu Ala  
                   500                                  505                                  510

r His Lys Gln Ile Met Glu Asn Ala Glu Ile Asn Asn Ile Ile Lys  
                   515                                  520                                  525

e Val Gly Leu Gln Tyr Lys Lys Ser Tyr Asp Asp Ala Glu Ser Leu  
                   530                                  535                                  540

s Thr Leu Arg Tyr Gly Lys Ile Met Ile Met Thr Asp Gln Asp Gln  
   5                                  550                                  555                                  560

p Gly Ser His Ile Lys Gly Leu Leu Ile Asn Phe Ile His His Asn  
                   565                                  570                                  575

p Pro Ser Leu Leu Lys His Gly Phe Leu Glu Glu Phe Ile Thr Pro  
                   580                                  585                                  590

e Val Lys Ala Ser Lys Asn Lys Gln Glu Leu Ser Phe Tyr Ser Ile  
                   595                                  600                                  605

o Glu Phe Asp Glu Trp Lys Lys His Ile Glu Asn Gln Lys Ala Trp  
   610                                  615                                  620

s Ile Lys Tyr Tyr Lys Gly Leu Gly Thr Ser Thr Ala Lys Glu Ala  
   5                                  630                                  635                                  640

s Glu Tyr Phe Ala Asp Met Glu Arg His Arg Ile Leu Phe Arg Tyr  
                   645                                  650                                  655

a Gly Pro Glu Asp Asp Ala Ala Ile Thr Leu Ala Phe Ser Lys Lys  
                   660                                  665                                  670

s Ile Asp Asp Arg Lys Glu Trp Leu Thr Asn Phe Met Glu Asp Arg  
                   675                                  680                                  685

g Gln Arg Arg Leu His Gly Leu Pro Glu Gln Phe Leu Tyr Gly Thr

eolf-seql-S000001.txt

```

690                                695                                700

la Thr Lys His Leu Thr Tyr Asn Asp Phe Ile Asn Lys Glu Leu Ile
35                                710                                715                                720

au Phe Ser Asn Ser Asp Asn Glu Arg Ser Ile Pro Ser Leu Val Asp
                                725                                730                                735

ly Phe Lys Pro Gly Gln Arg Lys Val Leu Phe Thr Cys Phe Lys Arg
                                740                                745                                750

sn Asp Lys Arg Glu Val Lys Val Ala Gln Leu Ala Gly Ser Val Ala
                                755                                760                                765

lu Met Ser Ala Tyr His His Gly Glu Gln Ala Leu Met Met Thr Ile
                                770                                775                                780

al Asn Leu Ala Gln Asn Phe Val Gly Ser Asn Asn Ile Asn Leu Leu
35                                790                                795                                800

n Pro Ile Gly Gln Phe Gly Thr Arg Leu His Gly Gly Lys Asp Ala
                                805                                810                                815

a Ser Pro Arg Tyr Ile Phe Thr Met Leu Ser Thr Leu Ala Arg Leu
                                820                                825                                830

u Phe Pro Ala Val Asp Asp Asn Leu Leu Lys Phe Leu Tyr Asp Asp
                                835                                840                                845

n Gln Arg Val Glu Pro Glu Trp Tyr Ile Pro Ile Ile Pro Met Val
850                                855                                860

u Ile Asn Gly Ala Glu Gly Ile Gly Thr Gly Trp Ala Cys Lys Leu
5                                870                                875                                880

o Asn Tyr Asp Ala Arg Glu Ile Val Asn Asn Val Arg Arg Met Leu
                                885                                890                                895

p Gly Leu Asp Pro His Pro Met Leu Pro Asn Tyr Lys Asn Phe Lys
                                900                                905                                910

```

eolf-seql-S000001.txt

ly Thr Ile Gln Glu Leu Gly Gln Asn Gln Tyr Ala Val Ser Gly Glu  
     915                            920                            925

le Phe Val Val Asp Arg Asn Thr Val Glu Ile Thr Glu Leu Pro Val  
     930                            935                            940

g Thr Trp Thr Gln Val Tyr Lys Glu Gln Val Leu Glu Pro Met Leu  
 15                            950                            955                            960

n Gly Thr Asp Lys Thr Pro Ala Leu Ile Ser Asp Tyr Lys Glu Tyr  
                     965                            970                            975

s Thr Asp Thr Thr Val Lys Phe Val Val Lys Met Thr Glu Glu Lys  
             980                            985                            990

u Ala Gln Ala Glu Ala Ala Gly Leu His Lys Val Phe Lys Leu Gln  
     995                            1000                            1005

r Thr Leu Thr Cys Asn Ser Met Val Leu Phe Asp His Met Gly  
     1010                            1015                            1020

s Leu Lys Lys Tyr Glu Thr Val Gln Asp Ile Leu Lys Glu Phe  
     1025                            1030                            1035

e Asp Leu Arg Leu Ser Tyr Tyr Gly Leu Arg Lys Glu Trp Leu  
     1040                            1045                            1050

l Gly Met Leu Gly Ala Glu Ser Thr Lys Leu Asn Asn Gln Ala  
     1055                            1060                            1065

g Phe Ile Leu Glu Lys Ile Gln Gly Lys Ile Thr Ile Glu Asn  
     1070                            1075                            1080

g Ser Lys Lys Asp Leu Ile Gln Met Leu Val Gln Arg Gly Tyr  
     1085                            1090                            1095

u Ser Asp Pro Val Lys Ala Trp Lys Glu Ala Gln Glu Lys Ala  
     1100                            1105                            1110

a Glu Glu Asp Glu Thr Gln Asn Gln His Asp Asp Ser Ser Ser  
     1115                            1120                            1125

## eolf-seql-S000001.txt

```

sp Ser  Gly Thr Pro Ser Gly  Pro Asp Phe Asn Tyr  Ile Leu Asn
  1130                1135                1140

st Ser  Leu Trp Ser Leu Thr  Lys Glu Lys Val  Glu  Glu Leu Ile
  1145                1150                1155

rs Gln  Arg Asp Ala Lys Gly  Arg Glu Val Asn Asp  Leu Lys Arg
  1160                1165                1170

rs Ser  Pro Ser Asp Leu Trp  Lys Glu Asp Leu Ala  Ala Phe Val
  1175                1180                1185

u Glu  Leu Asp Lys Val Glu  Ser Gln Glu Arg Glu  Asp Val Leu
  1190                1195                1200

a Gly  Met Ser Gly Lys Ala  Ile Lys Gly Lys Val  Gly Lys Pro
  1205                1210                1215

s Val  Lys Lys Leu Gln Leu  Glu Glu Thr Met Pro  Ser Pro Tyr
  1220                1225                1230

y Arg  Arg Ile Ile Pro Glu  Ile Thr Ala Met Lys  Ala Asp Ala
  1235                1240                1245

r Lys  Lys Leu Leu Lys Lys  Lys Lys Gly Asp Leu  Asp Thr Ala
  1250                1255                1260

a Val  Lys Val Glu Phe Asp  Glu Glu Phe Ser Gly  Ala Pro Val
  1265                1270                1275

u Gly  Ala Gly Glu Glu Ala  Leu Thr Pro Ser Val  Pro Ile Asn
  1280                1285                1290

s Gly  Pro Lys Pro Lys Arg  Glu Lys Lys Glu Pro  Gly Thr Arg
  1295                1300                1305

l Arg  Lys Thr Pro Thr Ser  Ser Gly Lys Pro Ser  Ala Lys Lys
  1310                1315                1320

l Lys  Lys Arg Asn Pro Trp  Ser Asp Asp Glu Ser  Lys Ser Glu
  1325                1330                1335

```

eolf-seql-S000001.txt

```

r Asp  Leu Glu Glu Thr Glu  Pro Val Val Ile Pro  Arg Asp Ser
 1340                1345                1350

u Leu  Arg Arg Ala Ala Ala  Glu Arg Pro Lys Tyr  Thr Phe Asp
 1355                1360                1365

e Ser  Glu Glu Glu Asp Asp  Asp Ala Asp Asp Asp  Asp Asp Asp
 1370                1375                1380

n Asn  Asp Leu Glu Glu Leu  Lys Val Lys Ala Ser  Pro Ile Thr
 1385                1390                1395

n Asp  Gly Glu Asp Glu Phe  Val Pro Ser Asp Gly  Leu Asp Lys
 1400                1405                1410

p Glu  Tyr Thr Phe Ser Pro  Gly Lys Ser Lys Ala  Thr Pro Glu
 1415                1420                1425

s Ser  Leu His Asp Lys Lys  Ser Gln Asp Phe Gly  Asn Leu Phe
 1430                1435                1440

r Phe  Pro Ser Tyr Ser Gln  Lys Ser Glu Asp Asp  Ser Ala Lys
 1445                1450                1455

e Asp  Ser Asn Glu Glu Asp  Ser Ala Ser Val Phe  Ser Pro Ser
 1460                1465                1470

e Gly  Leu Lys Gln Thr Asp  Lys Val Pro Ser Lys  Thr Val Ala
 1475                1480                1485

a Lys  Lys Gly Lys Pro Ser  Ser Asp Thr Val Pro  Lys Pro Lys
 1490                1495                1500

g Ala  Pro Lys Gln Lys Lys  Val Val Glu Ala Val  Asn Ser Asp
 1505                1510                1515

r Asp  Ser Glu Phe Gly Ile  Pro Lys Lys Thr Thr  Thr Pro Lys
 1520                1525                1530

y Lys  Gly Arg Gly Ala Lys  Lys Arg Lys Ala Ser  Gly Ser Glu

```

eolf-seql-S000001.txt

```

1535                               1540                               1545

sn Glu  Gly Asp Tyr Asn Pro  Gly Arg Lys Thr Ser  Lys Thr Thr
   1550                               1555                               1560

er Lys  Lys Pro Lys Lys Thr  Ser Phe Asp Gln Asp  Ser Asp Val
   1565                               1570                               1575

sp Ile  Phe Pro Ser Asp Phe  Pro Thr Glu Pro Pro  Ser Leu Pro
   1580                               1585                               1590

rg Thr  Gly Arg Ala Arg Lys  Glu Val Lys Tyr Phe  Ala Glu Ser
   1595                               1600                               1605

sp Glu  Glu Glu Asp Asp Val  Asp Phe Ala Met Phe  Asn
   1610                               1615                               1620

:10> 180
:11> 228
:12> PRT
:13> Homo sapiens

:00> 180

st Leu Ser Arg Cys Arg Ser Gly Leu Leu His Val Leu Gly Leu Ser
   5                               10                               15

se Leu Leu Gln Thr Arg Arg Pro Ile Leu Leu Cys Ser Pro Arg Leu
   20                               25                               30

st Lys Pro Leu Val Val Phe Val Leu Gly Gly Pro Gly Ala Gly Lys
   35                               40                               45

y Thr Gln Cys Ala Arg Ile Val Glu Lys Tyr Gly Tyr Thr His Leu
   50                               55                               60

r Ala Gly Glu Leu Leu Arg Asp Glu Arg Lys Asn Pro Asp Ser Gln
   70                               75                               80

r Gly Glu Leu Ile Glu Lys Tyr Ile Lys Glu Gly Lys Ile Val Pro
   85                               90                               95

l Glu Ile Thr Ile Ser Leu Leu Lys Arg Glu Met Asp Gln Thr Met

```

eolf-seql-S000001.txt

100

105

110

a Ala Asn Ala Gln Lys Asn Lys Phe Leu Ile Asp Gly Phe Pro Arg  
 115 120 125

n Gln Asp Asn Leu Gln Gly Trp Asn Lys Thr Met Asp Gly Lys Ala  
 130 135 140

p Val Ser Phe Val Leu Phe Phe Asp Cys Asn Asn Glu Ile Cys Ile  
 5 150 155 160

u Arg Cys Leu Glu Arg Gly Lys Ser Ser Gly Arg Ser Asp Asp Asn  
 165 170 175

g Glu Ser Leu Glu Lys Arg Ile Gln Thr Tyr Leu Gln Ser Thr Lys  
 180 185 190

o Ile Ile Asp Leu Tyr Glu Glu Met Gly Lys Val Lys Lys Ile Asp  
 195 200 205

a Ser Lys Ser Val Asp Glu Val Phe Asp Glu Val Val Gln Ile Phe  
 210 215 220

p Lys Glu Gly  
 5

10> 181  
 11> 268  
 12> PRT  
 13> Homo sapiens

00> 181

t Val Leu Glu Ser Thr Met Val Cys Val Asp Asn Ser Glu Tyr Met  
 5 10 15

g Asn Gly Asp Phe Leu Pro Thr Arg Leu Gln Ala Gln Gln Asp Ala  
 20 25 30

l Asn Ile Val Cys His Ser Lys Thr Arg Ser Asn Pro Glu Asn Asn  
 35 40 45

l Gly Leu Ile Thr Leu Ala Asn Asp Cys Glu Val Leu Thr Thr Leu



eolf-seql-S000001.txt

50  
 55 60  
 ar Pro Asp Thr Gly Arg Ile Leu Ser Lys Leu His Thr Val Gln Pro  
 5 70 75 80  
 s Gly Lys Ile Thr Phe Cys Thr Gly Ile Arg Val Ala His Leu Ala  
 85 90 95  
 u Lys His Arg Gln Gly Lys Asn His Lys Met Arg Ile Ile Ala Phe  
 100 105 110  
 l Gly Ser Pro Val Glu Asp Asn Glu Lys Asp Leu Val Lys Leu Ala  
 115 120 125  
 s Arg Leu Lys Lys Glu Lys Val Asn Val Asp Ile Ile Asn Phe Gly  
 130 135 140  
 u Glu Glu Val Asn Thr Glu Lys Leu Thr Ala Phe Val Asn Thr Leu  
 15 150 155 160  
 n Gly Lys Asp Gly Thr Gly Ser His Leu Val Thr Val Pro Pro Gly  
 165 170 175  
 o Ser Leu Ala Asp Ala Leu Ile Ser Ser Pro Ile Leu Ala Gly Glu  
 180 185 190  
 y Gly Ala Met Leu Gly Leu Gly Ala Ser Asp Phe Glu Phe Gly Val  
 195 200 205  
 p Pro Ser Ala Asp Pro Glu Leu Ala Leu Ala Leu Arg Val Ser Met  
 210 215 220  
 u Glu Gln Arg Gln Arg Gln Glu Glu Glu Ala Arg Arg Ala Ala Ala  
 5 230 235 240  
 a Ser Ala Ala Glu Ala Gly Ile Ala Thr Thr Gly Thr Glu Gly Glu  
 245 250 255  
 g Gly Gly Ile Arg Ser Pro Gly Thr Ala Gly Cys  
 260 265

eolf-seql-S000001.txt

```

:10> 182
:11> 162
:12> PRT
:13> Homo sapiens

:00> 182

t Lys Glu Thr Ile Met Asn Gln Glu Lys Leu Ala Lys Leu Gln Ala
   5                               10                      15

n Val Arg Ile Gly Gly Lys Gly Thr Ala Arg Arg Lys Lys Lys Val
   20                               25                      30

l His Arg Thr Ala Thr Ala Asp Asp Lys Lys Leu Gln Phe Ser Leu
   35                               40                      45

s Lys Leu Gly Val Asn Asn Ile Ser Gly Ile Glu Glu Val Asn Met
   50                               55                      60

e Thr Asn Gln Gly Thr Val Ile His Phe Asn Asn Pro Lys Val Gln
   70                               75                      80

a Ser Leu Ala Ala Asn Thr Phe Thr Ile Thr Gly His Ala Glu Thr
   85                               90                      95

s Gln Leu Thr Glu Met Leu Pro Ser Ile Leu Asn Gln Leu Gly Ala
  100                               105                      110

p Ser Leu Thr Ser Leu Arg Arg Leu Ala Glu Ala Leu Pro Lys Gln
  115                               120                      125

r Val Asp Gly Lys Ala Pro Leu Ala Thr Gly Glu Asp Asp Asp Asp
  130                               135                      140

u Val Pro Asp Leu Val Glu Asn Phe Asp Glu Ala Ser Lys Asn Glu
   5                               150                      155                      160

```

a Asn

```

10> 183
11> 193
12> PRT
13> Homo sapiens

```

## eolf-seql-S000001.txt

100&gt; 183

st Ala Ala Ile Arg Lys Lys Leu Val Ile Val Gly Asp Gly Ala Cys  
                   5                                  10                                  15

y Lys Thr Cys Leu Leu Ile Val Phe Ser Lys Asp Gln Phe Pro Glu  
                   20                                  25                                  30

l Tyr Val Pro Thr Val Phe Glu Asn Tyr Val Ala Asp Ile Glu Val  
                   35                                  40                                  45

p Gly Lys Gln Val Glu Leu Ala Leu Trp Asp Thr Ala Gly Gln Glu  
                   50                                  55                                  60

p Tyr Asp Arg Leu Arg Pro Leu Ser Tyr Pro Asp Thr Asp Val Ile  
                                   70                                  75                                  80

u Met Cys Phe Ser Ile Asp Ser Pro Asp Ser Leu Glu Asn Ile Pro  
                                   85                                  90                                  95

u Lys Trp Thr Pro Glu Val Lys His Phe Cys Pro Asn Val Pro Ile  
                   100                                  105                                  110

e Leu Val Gly Asn Lys Lys Asp Leu Arg Asn Asp Glu His Thr Arg  
                   115                                  120                                  125

g Glu Leu Ala Lys Met Lys Gln Glu Pro Val Lys Pro Glu Glu Gly  
                   130                                  135                                  140

g Asp Met Ala Asn Arg Ile Gly Ala Phe Gly Tyr Met Glu Cys Ser  
                   5                                  150                                  155                                  160

a Lys Thr Lys Asp Gly Val Arg Glu Val Phe Glu Met Ala Thr Arg  
                                   165                                  170                                  175

a Ala Leu Gln Ala Arg Arg Gly Lys Lys Lys Ser Gly Cys Leu Val  
                   180                                  185                                  190

u

eolf-seql-S000001.txt

```

:10> 184
:11> 334
:12> PRT
:13> Homo sapiens

00> 184

t Ala Thr Leu Lys Glu Lys Leu Ile Ala Pro Val Ala Glu Glu Glu
      5              10              15

a Thr Val Pro Asn Asn Lys Ile Thr Val Val Gly Val Gly Gln Val
      20              25              30

y Met Ala Cys Ala Ile Ser Ile Leu Gly Lys Ser Leu Ala Asp Glu
      35              40              45

u Ala Leu Val Asp Val Leu Glu Asp Lys Leu Lys Gly Glu Met Met
      50              55              60

p Leu Gln His Gly Ser Leu Phe Leu Gln Thr Pro Lys Ile Val Ala
      70              75              80

p Lys Asp Tyr Ser Val Thr Ala Asn Ser Lys Ile Val Val Val Thr
      85              90              95

a Gly Val Arg Gln Gln Glu Gly Glu Ser Arg Leu Asn Leu Val Gln
      100             105             110

g Asn Val Asn Val Phe Lys Phe Ile Ile Pro Gln Ile Val Lys Tyr
      115             120             125

r Pro Asp Cys Ile Ile Ile Val Val Ser Asn Pro Val Asp Ile Leu
      130             135             140

r Tyr Val Thr Trp Lys Leu Ser Gly Leu Pro Lys His Arg Val Ile
      5             150             155             160

y Ser Gly Cys Asn Leu Asp Ser Ala Arg Phe Arg Tyr Leu Met Ala
      165             170             175

i Lys Leu Gly Ile His Pro Ser Ser Cys His Gly Trp Ile Leu Gly
      180             185             190

```

eolf-seql-S000001.txt

lu His Gly Asp Ser Ser Val Ala Val Trp Ser Gly Val Asn Val Ala  
 195 200 205

ly Val Ser Leu Gln Glu Leu Asn Pro Glu Met Gly Thr Asp Asn Asp  
 210 215 220

er Glu Asn Trp Lys Glu Val His Lys Met Val Val Glu Ser Ala Tyr  
 225 230 235 240

lu Val Ile Lys Leu Lys Gly Tyr Thr Asn Trp Ala Ile Gly Leu Ser  
 245 250 255

al Ala Asp Leu Ile Glu Ser Met Leu Lys Asn Leu Ser Arg Ile His  
 260 265 270

ro Val Ser Thr Met Val Lys Gly Met Tyr Gly Ile Glu Asn Glu Val  
 275 280 285

ie Leu Ser Leu Pro Cys Ile Leu Asn Ala Arg Gly Leu Thr Ser Val  
 290 295 300

le Asn Gln Lys Leu Lys Asp Asp Glu Val Ala Gln Leu Lys Lys Ser  
 305 310 315 320

la Asp Thr Leu Trp Asp Ile Gln Lys Asp Leu Lys Asp Leu  
 325 330

10> 185

11> 343

12> PRT

13> Homo sapiens

00> 185

t Trp Pro Asn Gly Ser Ser Leu Gly Pro Cys Phe Arg Pro Thr Asn  
 5 10 15

e Thr Leu Glu Glu Arg Arg Leu Ile Ala Ser Pro Trp Phe Ala Ala  
 20 25 30

r Phe Cys Val Val Gly Leu Ala Ser Asn Leu Leu Ala Leu Ser Val  
 35 40 45

eolf-seql-S000001.txt

```

eu Ala Gly Ala Arg Gln Gly Gly Ser His Thr Arg Ser Ser Phe Leu
 50          55          60

ar Phe Leu Cys Gly Leu Val Leu Thr Asp Phe Leu Gly Leu Leu Val
 5          70          75          80

ar Gly Thr Ile Val Val Ser Gln His Ala Ala Leu Phe Glu Trp His
          85          90          95

la Val Asp Pro Gly Cys Arg Leu Cys Arg Phe Met Gly Val Val Met
          100          105          110

le Phe Phe Gly Leu Ser Pro Leu Leu Leu Gly Ala Ala Met Ala Ser
          115          120          125

lu Arg Tyr Leu Gly Ile Thr Arg Pro Phe Ser Arg Pro Ala Val Ala
          130          135          140

er Gln Arg Arg Ala Trp Ala Thr Val Gly Leu Val Trp Ala Ala Ala
          145          150          155          160

eu Ala Leu Gly Leu Leu Pro Leu Leu Gly Val Gly Arg Tyr Thr Val
          165          170          175

n Tyr Pro Gly Ser Trp Cys Phe Leu Thr Leu Gly Ala Glu Ser Gly
          180          185          190

p Val Ala Phe Gly Leu Leu Phe Ser Met Leu Gly Gly Leu Ser Val
          195          200          205

y Leu Ser Phe Leu Leu Asn Thr Val Ser Val Ala Thr Leu Cys His
          210          215          220

l Tyr His Gly Gln Glu Ala Ala Gln Gln Arg Pro Arg Asp Ser Glu
 5          230          235          240

l Glu Met Met Ala Gln Leu Leu Gly Ile Met Val Val Ala Ser Val
          245          250          255

s Trp Leu Pro Leu Leu Val Phe Ile Ala Gln Thr Val Leu Arg Asn
          260          265          270

```

## eolf-seql-S000001.txt

Pro Ala Met Ser Pro Ala Gly Gln Leu Ser Arg Thr Thr Glu Lys  
 275 280 285

Leu Leu Leu Ile Tyr Leu Arg Val Ala Thr Trp Asn Gln Ile Leu Asp  
 290 295 300

Trp Val Tyr Ile Leu Phe Arg Arg Ala Val Leu Arg Arg Leu Gln  
 305 310 315 320

Arg Leu Ser Thr Arg Pro Arg Ser Leu Ser Leu Gln Pro Gln Leu  
 325 330 335

Gln Arg Ser Gly Leu Gln  
 340

10> 186

11> 477

12> PRT

13> Homo sapiens

100> 186

Ala Asn Met Gln Gly Leu Val Glu Arg Leu Glu Arg Ala Val Ser  
 5 10 15

Leu Glu Ser Leu Ser Ala Glu Ser His Arg Pro Pro Gly Asn Cys  
 20 25 30

Glu Val Asn Gly Val Ile Ala Gly Val Ala Pro Ser Val Glu Ala  
 35 40 45

Asp Lys Leu Met Asp Ser Met Val Ala Glu Phe Leu Lys Asn Ser  
 50 55 60

Ile Leu Ala Gly Asp Val Glu Thr His Ala Glu Met Val His Ser  
 70 75 80

Phe Gln Ala Gln Arg Ala Phe Leu Leu Met Ala Ser Gln Tyr Gln  
 85 90 95

Pro His Glu Asn Asp Val Ala Ala Leu Leu Lys Pro Ile Ser Glu  
 100 105 110

## eolf-seql-S000001.txt

```

/s Ile Gln Glu Ile Gln Thr Phe Arg Glu Arg Asn Arg Gly Ser Asn
   115                               120                               125

at Phe Asn His Leu Ser Ala Val Ser Glu Ser Ile Pro Ala Leu Gly
   130                               135                               140

p Ile Ala Val Ser Pro Lys Pro Gly Pro Tyr Val Lys Glu Met Asn
15                               150                               155                               160

p Ala Ala Thr Phe Tyr Thr Asn Arg Val Leu Lys Asp Tyr Lys His
   165                               170                               175

r Asp Leu Arg His Val Asp Trp Val Lys Ser Tyr Leu Asn Ile Trp
   180                               185                               190

r Glu Leu Gln Ala Tyr Ile Lys Glu His His Thr Thr Gly Leu Thr
   195                               200                               205

p Ser Lys Thr Gly Pro Val Ala Ser Thr Val Ser Ala Phe Ser Val
210                               215                               220

u Ser Ser Gly Pro Gly Leu Pro Pro Pro Pro Pro Pro Leu Pro Pro
5                               230                               235                               240

o Gly Pro Pro Pro Leu Phe Glu Asn Glu Gly Lys Lys Glu Glu Ser
   245                               250                               255

r Pro Ser Arg Ser Ala Leu Phe Ala Gln Leu Asn Gln Gly Glu Ala
   260                               265                               270

e Thr Lys Gly Leu Arg His Val Thr Asp Asp Gln Lys Thr Tyr Lys
275                               280                               285

n Pro Ser Leu Arg Ala Gln Gly Gly Gln Thr Gln Ser Pro Thr Lys
290                               295                               300

r His Thr Pro Ser Pro Thr Ser Pro Lys Ser Tyr Pro Ser Gln Lys
5                               310                               315                               320

s Ala Pro Val Leu Glu Leu Glu Gly Lys Lys Trp Arg Val Glu Tyr
   325                               330                               335

```



eolf-seql-S000001.txt

ln Glu Asp Arg Asn Asp Leu Val Ile Ser Glu Thr Glu Leu Lys Gln  
                   340                  345                  350

al Ala Tyr Ile Phe Lys Cys Glu Lys Ser Thr Ile Gln Ile Lys Gly  
                   355                  360                  365

ys Val Asn Ser Ile Ile Ile Asp Asn Cys Lys Lys Leu Gly Leu Val  
           370                  375                  380

ie Asp Asn Val Val Gly Ile Val Glu Val Ile Asn Ser Gln Asp Ile  
 35                  390                  395                  400

n Ile Gln Val Met Gly Arg Val Pro Thr Ile Ser Ile Asn Lys Thr  
                   405                  410                  415

u Gly Cys His Ile Tyr Leu Ser Glu Asp Ala Leu Asp Cys Glu Ile  
                   420                  425                  430

l Ser Ala Lys Ser Ser Glu Met Asn Ile Leu Ile Pro Gln Asp Gly  
           435                  440                  445

p Tyr Arg Glu Phe Pro Ile Pro Glu Gln Phe Lys Thr Ala Trp Asp  
           450                  455                  460

y Ser Lys Leu Ile Thr Glu Pro Ala Glu Ile Met Ala  
 45                  470                  475

10> 187  
 11> 309  
 12> PRT  
 13> Homo sapiens

00> 187

t Asp Glu Lys Val Phe Thr Lys Glu Leu Asp Gln Trp Ile Glu Gln  
                   5                  10                  15

u Asn Glu Cys Lys Gln Leu Ser Glu Ser Gln Val Lys Ser Leu Cys  
           20                  25                  30

u Lys Ala Lys Glu Ile Leu Thr Lys Glu Ser Asn Val Gln Glu Val  
           35                  40                  45

eolf-seql-S000001.txt

```

rg Cys Pro Val Thr Val Cys Gly Asp Val His Gly Gln Phe His Asp
 50          55          60

eu Met Glu Leu Phe Arg Ile Gly Gly Lys Ser Pro Asp Thr Asn Tyr
 5          70          75          80

eu Phe Met Gly Asp Tyr Val Asp Arg Gly Tyr Tyr Ser Val Glu Thr
          85          90          95

al Thr Leu Leu Val Ala Leu Lys Val Arg Tyr Arg Glu Arg Ile Thr
          100          105          110

le Leu Arg Gly Asn His Glu Ser Arg Gln Ile Thr Gln Val Tyr Gly
          115          120          125

le Tyr Asp Glu Cys Leu Arg Lys Tyr Gly Asn Ala Asn Val Trp Lys
          130          135          140

r Phe Thr Asp Leu Phe Asp Tyr Leu Pro Leu Thr Ala Leu Val Asp
 5          150          155          160

y Gln Ile Phe Cys Leu His Gly Gly Leu Ser Pro Ser Ile Asp Thr
          165          170          175

u Asp His Ile Arg Ala Leu Asp Arg Leu Gln Glu Val Pro His Glu
          180          185          190

y Pro Met Cys Asp Leu Leu Trp Ser Asp Pro Asp Asp Arg Gly Gly
          195          200          205

p Gly Ile Ser Pro Arg Gly Ala Gly Tyr Thr Phe Gly Gln Asp Ile
          210          215          220

r Glu Thr Phe Asn His Ala Asn Gly Leu Thr Leu Val Ser Arg Ala
 5          230          235          240

s Gln Leu Val Met Glu Gly Tyr Asn Trp Cys His Asp Arg Asn Val
          245          250          255

l Thr Ile Phe Ser Ala Pro Asn Tyr Cys Tyr Arg Cys Gly Asn Gln

```

eolf-seql-S000001.txt

260

265

270

la Ala Ile Met Glu Leu Asp Asp Thr Leu Lys Tyr Ser Phe Leu Gln  
 275 280 285

he Asp Pro Ala Pro Arg Arg Gly Glu Pro His Val Thr Arg Arg Thr  
 290 295 300

ro Asp Tyr Phe Leu  
 305

210> 188  
 211> 169  
 212> PRT  
 213> Homo sapiens

400> 188

et Ala Ala Leu Leu Leu Arg His Val Gly Arg His Cys Leu Arg Ala  
 5 10 15

is Phe Ser Pro Gln Leu Cys Ile Arg Asn Ala Val Pro Leu Gly Thr  
 20 25 30

ir Ala Lys Glu Glu Met Glu Arg Phe Trp Asn Lys Asn Ile Gly Ser  
 35 40 45

sn Arg Pro Leu Ser Pro His Ile Thr Ile Tyr Ser Trp Ser Leu Pro  
 50 55 60

et Ala Met Ser Ile Cys His Arg Gly Thr Gly Ile Ala Leu Ser Ala  
 70 75 80

y Val Ser Leu Phe Gly Met Ser Ala Leu Leu Leu Pro Gly Asn Phe  
 85 90 95

u Ser Tyr Leu Glu Leu Val Lys Ser Leu Cys Leu Gly Pro Ala Leu  
 100 105 110

e His Thr Ala Lys Phe Ala Leu Val Phe Pro Leu Met Tyr His Thr  
 115 120 125

p Asn Gly Ile Arg His Leu Met Trp Asp Leu Gly Lys Gly Leu Lys

eolf-seql-S000001.txt  
 130 135 140  
 le Pro Gln Leu Tyr Gln Ser Gly Val Val Val Leu Val Leu Thr Val  
 45 150 155 160  
 eu Ser Ser Met Gly Leu Ala Ala Met  
 165  
 210> 189  
 211> 201  
 212> PRT  
 213> Homo sapiens  
 400> 189  
 at Thr Glu Lys Ala Pro Glu Pro His Val Glu Glu Asp Asp Asp Asp  
 5 10 15  
 lu Leu Asp Ser Lys Leu Asn Tyr Lys Pro Pro Pro Gln Lys Ser Leu  
 20 25 30  
 's Glu Leu Gln Glu Met Asp Lys Asp Asp Glu Ser Leu Ile Lys Tyr  
 35 40 45  
 's Lys Thr Leu Leu Gly Asp Gly Pro Val Val Thr Asp Pro Lys Ala  
 50 55 60  
 o Asn Val Val Val Thr Arg Leu Thr Leu Val Cys Glu Ser Ala Pro  
 70 75 80  
 y Pro Ile Thr Met Asp Leu Thr Gly Asp Leu Glu Ala Leu Lys Lys  
 85 90 95  
 u Thr Ile Val Leu Lys Glu Gly Ser Glu Tyr Arg Val Lys Ile His  
 100 105 110  
 e Lys Val Asn Arg Asp Ile Val Ser Gly Leu Lys Tyr Val Gln His  
 115 120 125  
 : Tyr Arg Thr Gly Val Lys Val Asp Lys Ala Thr Phe Met Val Gly  
 130 135 140  
 : Tyr Gly Pro Arg Pro Glu Glu Tyr Glu Phe Leu Thr Pro Val Glu

eolf-seql-S000001.txt  
 15 150 155 160  
 lu Ala Pro Lys Gly Met Leu Ala Arg Gly Thr Tyr His Asn Lys Ser  
 165 170 175  
 ie Phe Thr Asp Asp Asp Lys Gln Asp His Leu Ser Trp Glu Trp Asn  
 180 185 190  
 eu Ser Ile Lys Lys Glu Trp Thr Glu  
 195 200  
 ?10> 190  
 ?11> 377  
 ?12> PRT  
 ?13> Homo sapiens  
 100> 190  
 et Lys Phe Pro Gly Pro Leu Glu Asn Gln Arg Leu Ser Phe Leu Leu  
 5 10 15  
 u Lys Ala Ile Thr Arg Glu Ala Gln Met Trp Lys Val Asn Val Arg  
 20 25 30  
 s Met Pro Ser Asn Gln Asn Val Ser Pro Ser Gln Arg Asp Glu Val  
 35 40 45  
 e Gln Trp Leu Ala Lys Leu Lys Tyr Gln Phe Asn Leu Tyr Pro Glu  
 50 55 60  
 r Phe Ala Leu Ala Ser Ser Leu Leu Asp Arg Phe Leu Ala Thr Val  
 70 75 80  
 s Ala His Pro Lys Tyr Leu Ser Cys Ile Ala Ile Ser Cys Phe Phe  
 85 90 95  
 u Ala Ala Lys Thr Val Glu Glu Asp Glu Arg Ile Pro Val Leu Lys  
 100 105 110  
 l Leu Ala Arg Asp Ser Phe Cys Gly Cys Ser Ser Ser Glu Ile Leu  
 115 120 125  
 g Met Glu Arg Ile Ile Leu Asp Lys Leu Asn Trp Asp Leu His Thr

eolf-seql-S000001.txt

130		135		140
15	a Thr Pro Leu Asp Phe Leu His Ile Phe His Ala Ile Ala Val Ser	150	155	160
165	r Arg Pro Gln Leu Leu Phe Ser Leu Pro Lys Leu Ser Pro Ser Gln	170	175	
180	s Leu Ala Val Leu Thr Lys Gln Leu Leu His Cys Met Ala Cys Asn	185	190	
195	n Leu Leu Gln Phe Arg Gly Ser Met Leu Ala Leu Ala Met Val Ser	200	205	
210	u Glu Met Glu Lys Leu Ile Pro Asp Trp Leu Ser Leu Thr Ile Glu	215	220	
230	u Leu Gln Lys Ala Gln Met Asp Ser Ser Gln Leu Ile His Cys Arg	235	240	
245	u Leu Val Ala His His Leu Ser Thr Leu Gln Ser Ser Leu Pro Leu	250	255	
260	n Ser Val Tyr Val Tyr Arg Pro Leu Lys His Thr Leu Val Thr Cys	265	270	
275	p Lys Gly Val Phe Arg Leu His Pro Ser Ser Val Pro Gly Pro Asp	280	285	
290	e Ser Lys Asp Asn Ser Lys Pro Glu Val Pro Val Arg Gly Thr Ala	295	300	
310	a Phe Tyr His His Leu Pro Ala Ala Ser Gly Cys Lys Gln Thr Ser	315	320	
325	r Lys Arg Lys Val Glu Glu Met Glu Val Asp Asp Phe Tyr Asp Gly	330	335	
340	e Lys Arg Leu Tyr Asn Glu Asp Asn Val Ser Glu Asn Val Gly Ser	345	350	

eolf-seql-S000001.txt

al Cys Gly Thr Asp Leu Ser Arg Gln Glu Gly His Ala Ser Pro Cys  
 355 360 365

ro Pro Leu Gln Pro Val Ser Val Met  
 370 375

210> 191  
 211> 282  
 212> PRT  
 213> Homo sapiens

100> 191

et Glu Arg Pro Ser Leu Arg Ala Leu Leu Leu Gly Ala Ala Gly Leu  
 5 10 15

eu Leu Leu Leu Leu Pro Leu Ser Ser Ser Ser Ser Ser Asp Thr Cys  
 20 25 30

ly Pro Cys Glu Pro Ala Ser Cys Pro Pro Leu Pro Pro Leu Gly Cys  
 35 40 45

eu Leu Gly Glu Thr Arg Asp Ala Cys Gly Cys Cys Pro Met Cys Ala  
 50 55 60

g Gly Glu Gly Glu Pro Cys Gly Gly Gly Gly Ala Gly Arg Gly Tyr  
 70 75 80

's Ala Pro Gly Met Glu Cys Val Lys Ser Arg Lys Arg Arg Lys Gly  
 85 90 95

's Ala Gly Ala Ala Ala Gly Gly Pro Gly Val Ser Gly Val Cys Val  
 100 105 110

's Lys Ser Arg Tyr Pro Val Cys Gly Ser Asp Gly Thr Thr Tyr Pro  
 115 120 125

r Gly Cys Gln Leu Arg Ala Ala Ser Gln Arg Ala Glu Ser Arg Gly  
 130 135 140

u Lys Ala Ile Thr Gln Val Ser Lys Gly Thr Cys Glu Gln Gly Pro  
 15 150 155 160

eolf-seql-S000001.txt

er Ile Val Thr Pro Pro Lys Asp Ile Trp Asn Val Thr Gly Ala Gln  
                   165                  170                  175

al Tyr Leu Ser Cys Glu Val Ile Gly Ile Pro Thr Pro Val Leu Ile  
                   180                  185                  190

rp Asn Lys Val Lys Arg Gly His Tyr Gly Val Gln Arg Thr Glu Leu  
           195                  200                  205

u Pro Gly Asp Arg Asp Asn Leu Ala Ile Gln Thr Arg Gly Gly Pro  
       210                  215                  220

u Lys His Glu Val Thr Gly Trp Val Leu Val Ser Pro Leu Ser Lys  
   15                  230                  235                  240

u Asp Ala Gly Glu Tyr Glu Cys His Ala Ser Asn Ser Gln Gly Gln  
                   245                  250                  255

a Ser Ala Ser Ala Lys Ile Thr Val Val Asp Ala Leu His Glu Ile  
           260                  265                  270

o Val Lys Lys Gly Glu Gly Ala Glu Leu  
       275                  280

10> 192

11> 339

12> PRT

13> Homo sapiens

00> 192

t Asp Gln Asn Asn Ser Leu Pro Pro Tyr Ala Gln Gly Leu Ala Ser  
                   5                  10                  15

o Gln Gly Ala Met Thr Pro Gly Ile Pro Ile Phe Ser Pro Met Met  
       20                  25                  30

o Tyr Gly Thr Gly Leu Thr Pro Gln Pro Ile Gln Asn Thr Asn Ser  
       35                  40                  45

u Ser Ile Leu Glu Glu Gln Gln Arg Gln Gln Gln Gln Gln Gln  
       50                  55                  60



## eolf-seql-S000001.txt

ln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln  
 5 70 75 80

ln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Ala  
 85 90 95

al Ala Ala Ala Ala Val Gln Gln Ser Thr Ser Gln Gln Ala Thr Gln  
 100 105 110

ly Thr Ser Gly Gln Ala Pro Gln Leu Phe His Ser Gln Thr Leu Thr  
 115 120 125

ar Ala Pro Leu Pro Gly Thr Thr Pro Leu Tyr Pro Ser Pro Met Thr  
 130 135 140

ro Met Thr Pro Ile Thr Pro Ala Thr Pro Ala Ser Glu Ser Ser Gly  
 15 150 155 160

le Val Pro Gln Leu Gln Asn Ile Val Ser Thr Val Asn Leu Gly Cys  
 165 170 175

rs Leu Asp Leu Lys Thr Ile Ala Leu Arg Ala Arg Asn Ala Glu Tyr  
 180 185 190

sn Pro Lys Arg Phe Ala Ala Val Ile Met Arg Ile Arg Glu Pro Arg  
 195 200 205

ar Thr Ala Leu Ile Phe Ser Ser Gly Lys Met Val Cys Thr Gly Ala  
 210 215 220

rs Ser Glu Glu Gln Ser Arg Leu Ala Ala Arg Lys Tyr Ala Arg Val  
 230 235 240

al Gln Lys Leu Gly Phe Pro Ala Lys Phe Leu Asp Phe Lys Ile Gln  
 245 250 255

n Met Val Gly Ser Cys Asp Val Lys Phe Pro Ile Arg Leu Glu Gly  
 260 265 270

u Val Leu Thr His Gln Gln Phe Ser Ser Tyr Glu Pro Glu Leu Phe  
 275 280 285

## eolf-seql-S000001.txt

ro Gly Leu Ile Tyr Arg Met Ile Lys Pro Arg Ile Val Leu Leu Ile  
 290 295 300

re Val Ser Gly Lys Val Val Leu Thr Gly Ala Lys Val Arg Ala Glu  
 305 310 315 320

le Tyr Glu Ala Phe Glu Asn Ile Tyr Pro Ile Leu Lys Gly Phe Arg  
 325 330 335

ys Thr Thr

210> 193  
 211> 184  
 212> PRT  
 213> Homo sapiens

100> 193

et Ala Ala Ala Gly Gly Ala Arg Leu Leu Arg Ala Ala Ser Ala Val  
 5 10 15

eu Gly Gly Pro Ala Gly Arg Trp Leu His His Ala Gly Ser Arg Ala  
 20 25 30

y Ser Ser Gly Leu Leu Arg Asn Arg Gly Pro Gly Gly Ser Ala Glu  
 35 40 45

a Ser Arg Ser Leu Ser Val Ser Ala Arg Ala Arg Ser Ser Ser Glu  
 50 55 60

sp Lys Ile Thr Val His Phe Ile Asn Arg Asp Gly Glu Thr Leu Thr  
 70 75 80

er Lys Gly Lys Val Gly Asp Ser Leu Leu Asp Val Val Val Glu Asn  
 85 90 95

n Leu Asp Ile Asp Gly Phe Gly Ala Cys Glu Gly Thr Leu Ala Cys  
 100 105 110

r Thr Cys His Leu Ile Phe Glu Asp His Ile Tyr Glu Lys Leu Asp  
 115 120 125

## eolf-seql-S000001.txt

la Ile Thr Asp Glu Glu Asn Asp Met Leu Asp Leu Ala Tyr Gly Leu  
130 135 140

ar Asp Arg Ser Arg Leu Gly Cys Gln Ile Cys Leu Thr Lys Ser Met  
45 150 155 160

sp Asn Met Thr Val Arg Val Pro Glu Thr Val Ala Asp Ala Arg Gln  
165 170 175

er Ile Asp Val Gly Lys Thr Ser  
180

210> 194

211> 206

212> PRT

213> Homo sapiens

400> 194

et Thr Ala Ser Val Leu Arg Ser Ile Ser Leu Ala Leu Arg Pro Thr  
5 10 15

er Gly Leu Leu Gly Thr Trp Gln Thr Gln Leu Arg Glu Thr His Gln  
20 25 30

g Ala Ser Leu Leu Ser Phe Trp Glu Leu Ile Pro Met Arg Ser Glu  
35 40 45

o Leu Arg Lys Lys Lys Lys Val Asp Pro Lys Lys Asp Gln Glu Ala  
50 55 60

s Glu Arg Leu Lys Arg Lys Ile Arg Lys Leu Glu Lys Ala Thr Gln  
70 75 80

u Leu Ile Pro Ile Glu Asp Phe Ile Thr Pro Leu Lys Phe Leu Asp  
85 90 95

s Ala Arg Glu Arg Pro Gln Val Glu Leu Thr Phe Glu Glu Thr Glu  
100 105 110

g Arg Ala Leu Leu Leu Lys Lys Trp Ser Leu Tyr Lys Gln Gln Glu  
115 120 125

## eolf-seql-S000001.txt

rg Lys Met Glu Arg Asp Thr Ile Arg Ala Met Leu Glu Ala Gln Gln  
 130 135 140

lu Ala Leu Glu Glu Leu Gln Leu Glu Ser Pro Lys Leu His Ala Glu  
 15 150 155 160

la Ile Lys Arg Asp Pro Asn Leu Phe Pro Phe Glu Lys Glu Gly Pro  
 165 170 175

is Tyr Thr Pro Pro Ile Pro Asn Tyr Gln Pro Pro Glu Gly Arg Tyr  
 180 185 190

sn Asp Ile Thr Lys Val Tyr Thr Gln Val Glu Phe Lys Arg  
 195 200 205

!10> 195

!11> 75

!12> PRT

!13> Homo sapiens

!00> 195

st Lys Gly Glu Thr Pro Val Asn Ser Thr Met Ser Ile Gly Gln Ala  
 5 10 15

g Lys Met Val Glu Gln Leu Lys Ile Glu Ala Ser Leu Cys Arg Ile  
 20 25 30

s Val Ser Lys Ala Ala Ala Asp Leu Met Thr Tyr Cys Asp Ala His  
 35 40 45

a Cys Glu Asp Pro Leu Ile Thr Pro Val Pro Thr Ser Glu Asn Pro  
 50 55 60

e Arg Glu Lys Lys Phe Phe Cys Ala Leu Leu  
 70 75

10> 196

11> 317

12> PRT

13> Homo sapiens

00> 196

eolf-seq1-S000001.txt

et Arg Leu Gly Pro Arg Thr Ala Ala Leu Gly Leu Leu Leu Cys  
5 10 15

la Ala Ala Ala Gly Ala Gly Lys Ala Glu Glu Leu His Tyr Pro Leu  
20 25 30

ly Glu Arg Arg Ser Asp Tyr Asp Arg Glu Ala Leu Leu Gly Val Gln  
35 40 45

lu Asp Val Asp Glu Tyr Val Lys Leu Gly His Glu Glu Gln Gln Lys  
50 55 60

rg Leu Gln Ala Ile Ile Lys Lys Ile Asp Leu Asp Ser Asp Gly Phe  
5 70 75 80

eu Thr Glu Ser Glu Leu Ser Ser Trp Ile Gln Met Ser Phe Lys His  
85 90 95

yr Ala Met Gln Glu Ala Lys Gln Gln Phe Val Glu Tyr Asp Lys Asn  
100 105 110

er Asp Asp Thr Val Thr Trp Asp Glu Tyr Asn Ile Gln Met Tyr Asp  
115 120 125

rg Val Ile Asp Phe Asp Glu Asn Thr Ala Leu Asp Asp Ala Glu Glu  
130 135 140

lu Ser Phe Arg Lys Leu His Leu Lys Asp Lys Lys Arg Phe Glu Lys  
15 150 155 160

la Asn Gln Asp Ser Gly Pro Gly Leu Ser Leu Glu Glu Phe Ile Ala  
165 170 175

le Glu His Pro Glu Glu Val Asp Tyr Met Thr Glu Phe Val Ile Gln  
180 185 190

lu Ala Leu Glu Glu His Asp Lys Asn Gly Asp Gly Phe Val Ser Leu  
195 200 205

lu Glu Phe Leu Gly Asp Tyr Arg Trp Asp Pro Thr Ala Asn Glu Asp  
210 215 220

## eolf-seql-S000001.txt

ro Glu Trp Ile Leu Val Glu Lys Asp Arg Phe Val Asn Asp Tyr Asp  
25 230 235 240

ys Asp Asn Asp Gly Arg Leu Asp Pro Gln Glu Leu Leu Pro Trp Val  
245 250 255

al Pro Asn Asn Gln Gly Ile Ala Gln Glu Glu Ala Leu His Leu Ile  
260 265 270

sp Glu Met Asp Leu Asn Gly Asp Lys Lys Leu Ser Glu Glu Glu Ile  
275 280 285

eu Glu Asn Pro Asp Leu Phe Leu Thr Ser Glu Ala Thr Asp Tyr Gly  
290 295 300

rg Gln Leu His Asp Asp Tyr Phe Tyr His Asp Glu Leu  
305 310 315

10> 197

11> 239

12> PRT

13> Homo sapiens

100> 197

et Ala Pro Ser Val Pro Ala Ala Glu Pro Glu Tyr Pro Lys Gly Ile  
5 10 15

g Ala Val Leu Leu Gly Pro Pro Gly Ala Gly Lys Gly Thr Gln Ala  
20 25 30

o Arg Leu Ala Glu Asn Phe Cys Val Cys His Leu Ala Thr Gly Asp  
35 40 45

t Leu Arg Ala Met Val Ala Ser Gly Ser Glu Leu Gly Lys Lys Leu  
50 55 60

s Ala Thr Met Asp Ala Gly Lys Leu Val Ser Asp Glu Met Val Val  
70 75 80

u Leu Ile Glu Lys Asn Leu Glu Thr Pro Leu Cys Lys Asn Gly Phe  
85 90 95

## eolf-seql-S000001.txt

eu Leu Asp Gly Phe Pro Arg Thr Val Arg Gln Ala Glu Met Leu Asp  
 100 105 110

sp Leu Met Glu Lys Arg Lys Glu Lys Leu Asp Ser Val Ile Glu Phe  
 115 120 125

er Ile Pro Asp Ser Leu Leu Ile Arg Arg Ile Thr Gly Arg Leu Ile  
 130 135 140

is Pro Lys Ser Gly Arg Ser Tyr His Glu Glu Phe Asn Pro Pro Lys  
 145 150 155 160

lu Pro Met Lys Asp Asp Ile Thr Gly Glu Pro Leu Ile Arg Arg Ser  
 165 170 175

sp Asp Asn Glu Lys Ala Leu Lys Ile Arg Leu Gln Ala Tyr His Thr  
 180 185 190

ln Thr Thr Pro Leu Ile Glu Tyr Tyr Arg Lys Arg Gly Ile His Ser  
 195 200 205

la Ile Asp Ala Ser Gln Thr Pro Asp Val Val Phe Ala Ser Ile Leu  
 210 215 220

la Ala Phe Ser Lys Ala Thr Cys Lys Asp Leu Val Met Phe Ile  
 225 230 235

110> 198

111> 217

112> PRT

113> Homo sapiens

100> 198

et Ser Ser Lys Val Ser Arg Asp Thr Leu Tyr Glu Ala Val Arg Glu  
 5 10 15

l Leu His Gly Asn Gln Arg Lys Arg Arg Lys Phe Leu Glu Thr Val  
 20 25 30

u Leu Gln Ile Ser Leu Lys Asn Tyr Asp Pro Gln Lys Asp Lys Arg  
 35 40 45

## eolf-seql-S000001.txt

```

he Ser Gly Thr Val Arg Leu Lys Ser Thr Pro Arg Pro Lys Phe Ser
  50                      55                      60

al Cys Val Leu Gly Asp Gln Gln His Cys Asp Glu Ala Lys Ala Val
  5                      70                      75                      80

sp Ile Pro His Met Asp Ile Glu Ala Leu Lys Lys Leu Asn Lys Asn
          85                      90                      95

ys Lys Leu Val Lys Lys Leu Ala Lys Lys Tyr Asp Ala Phe Leu Ala
          100                      105                      110

er Glu Ser Leu Ile Lys Gln Ile Pro Arg Ile Leu Gly Pro Gly Leu
          115                      120                      125

sn Lys Ala Gly Lys Phe Pro Ser Leu Leu Thr His Asn Glu Asn Met
  130                      135                      140

al Ala Lys Val Asp Glu Val Lys Ser Thr Ile Lys Phe Gln Met Lys
  145                      150                      155                      160

ys Val Leu Cys Leu Ala Val Ala Val Gly His Val Lys Met Thr Asp
          165                      170                      175

sp Glu Leu Val Tyr Asn Ile His Leu Ala Val Asn Phe Leu Val Ser
          180                      185                      190

eu Leu Lys Lys Asn Trp Gln Asn Val Arg Ala Leu Tyr Ile Lys Ser
          195                      200                      205

ir Met Gly Lys Pro Gln Arg Leu Tyr
  210                      215

:10> 199
:11> 150
:12> PRT
:13> Homo sapiens

00> 199

t Ser Lys Ile Ser Gln Gln Asn Ser Thr Pro Gly Val Asn Gly Ile
          5                      10                      15

```



## eolf-seql-S000001.txt

er Val Ile His Thr Gln Ala His Ala Ser Gly Leu Gln Gln Val Pro  
                   20                                  25  30

ln Leu Val Pro Ala Gly Pro Gly Gly Gly Gly Lys Ala Val Ala Pro  
                   35                                  40  45

er Lys Gln Ser Lys Lys Ser Ser Pro Met Asp Arg Asn Ser Asp Glu  
           50                                  55  60

yr Arg Gln Arg Arg Glu Arg Asn Asn Met Ala Val Lys Lys Ser Arg  
   5                                  70  75  80

eu Lys Ser Lys Gln Lys Ala Gln Asp Thr Leu Gln Arg Val Asn Gln  
                   85                                  90  95

eu Lys Glu Glu Asn Glu Arg Leu Glu Ala Lys Ile Lys Leu Leu Thr  
                   100                                  105  110

ys Glu Leu Ser Val Leu Lys Asp Leu Phe Leu Glu His Ala His Asn  
           115                                  120  125

eu Ala Asp Asn Val Gln Ser Ile Ser Thr Glu Asn Thr Thr Ala Asp  
           130                                  135  140

ly Asp Asn Ala Gly Gln  
   15                                  150

?10> 200

?11> 331

?12> PRT

?13> Homo sapiens

!00> 200

et Gly Thr Pro Gln Lys Asp Val Ile Ile Lys Ser Asp Ala Pro Asp  
                   5                                  10  15

ir Leu Leu Leu Glu Lys His Ala Asp Tyr Ile Ala Ser Tyr Gly Ser  
                   20                                  25  30

's Lys Asp Asp Tyr Glu Tyr Cys Met Ser Glu Tyr Leu Arg Met Ser  
           35                                  40  45

## eolf-seql-S000001.txt

ly Ile Tyr Trp Gly Leu Thr Val Met Asp Leu Met Gly Gln Leu His  
 50 55 60

rg Met Asn Arg Glu Glu Ile Leu Ala Phe Ile Lys Ser Cys Gln His  
 5 70 75 80

lu Cys Gly Gly Ile Ser Ala Ser Ile Gly His Asp Pro His Leu Leu  
 85 90 95

yr Thr Leu Ser Ala Val Gln Ile Leu Thr Leu Tyr Asp Ser Ile Asn  
 100 105 110

al Ile Asp Val Asn Lys Val Val Glu Tyr Val Lys Gly Leu Gln Lys  
 115 120 125

lu Asp Gly Ser Phe Ala Gly Asp Ile Trp Gly Glu Ile Asp Thr Arg  
 130 135 140

ne Ser Phe Cys Ala Val Ala Thr Leu Ala Leu Leu Gly Lys Leu Asp  
 145 150 155 160

la Ile Asn Val Glu Lys Ala Ile Glu Phe Val Leu Ser Cys Met Asn  
 165 170 175

ne Asp Gly Gly Phe Gly Cys Arg Pro Gly Ser Glu Ser His Ala Gly  
 180 185 190

ln Ile Tyr Cys Cys Thr Gly Phe Leu Ala Ile Thr Ser Gln Leu His  
 195 200 205

.n Val Asn Ser Asp Leu Leu Gly Trp Trp Leu Cys Glu Arg Gln Leu  
 210 215 220

o Ser Gly Gly Leu Asn Gly Arg Pro Glu Lys Leu Pro Asp Val Cys  
 225 230 235 240

r Ser Trp Trp Val Leu Ala Ser Leu Lys Ile Ile Gly Arg Leu His  
 245 250 255

p Ile Asp Arg Glu Lys Leu Arg Asn Phe Ile Leu Ala Cys Gln Asp  
 260 265 270

## eolf-seql-S000001.txt

lu Glu Thr Gly Gly Phe Ala Asp Arg Pro Gly Asp Met Val Asp Pro  
 275 280 285

he His Thr Leu Phe Gly Ile Ala Gly Leu Ser Leu Leu Gly Glu Glu  
 290 295 300

ln Ile Lys Pro Val Asn Pro Val Phe Cys Met Pro Glu Glu Val Leu  
 05 310 315 320

ln Arg Val Asn Val Gln Pro Glu Leu Val Ser  
 325 330

210> 201  
 211> 537  
 212> PRT  
 213> Homo sapiens

400> 201

et Gly Cys Val Gln Cys Lys Asp Lys Glu Ala Thr Lys Leu Thr Glu  
 5 10 15

lu Arg Asp Gly Ser Leu Asn Gln Ser Ser Gly Tyr Arg Tyr Gly Thr  
 20 25 30

sp Pro Thr Pro Gln His Tyr Pro Ser Phe Gly Val Thr Ser Ile Pro  
 35 40 45

sn Tyr Asn Asn Phe His Ala Ala Gly Gly Gln Gly Leu Thr Val Phe  
 50 55 60

ly Gly Val Asn Ser Ser Ser His Thr Gly Thr Leu Arg Thr Arg Gly  
 70 75 80

ly Thr Gly Val Thr Leu Phe Val Ala Leu Tyr Asp Tyr Glu Ala Arg  
 85 90 95

ir Glu Asp Asp Leu Ser Phe His Lys Gly Glu Lys Phe Gln Ile Leu  
 100 105 110

in Ser Ser Glu Gly Asp Trp Trp Glu Ala Arg Ser Leu Thr Thr Gly  
 115 120 125

## eolf-seql-S000001.txt

```

lu Thr Gly Tyr Ile Pro Ser Asn Tyr Val Ala Pro Val Asp Ser Ile
 130                      135                      140

ln Ala Glu Glu Trp Tyr Phe Gly Lys Leu Gly Arg Lys Asp Ala Glu
 45                      150                      155                      160

rg Gln Leu Leu Ser Phe Gly Asn Pro Arg Gly Thr Phe Leu Ile Arg
                      165                      170                      175

lu Ser Glu Thr Thr Lys Gly Ala Tyr Ser Leu Ser Ile Arg Asp Trp
                      180                      185                      190

sp Asp Met Lys Gly Asp His Val Lys His Tyr Lys Ile Arg Lys Leu
 195                      200                      205

sp Asn Gly Gly Tyr Tyr Ile Thr Thr Arg Ala Gln Phe Glu Thr Leu
 210                      215                      220

ln Gln Leu Val Gln His Tyr Ser Glu Arg Ala Ala Gly Leu Cys Cys
 25                      230                      235                      240

rg Leu Val Val Pro Cys His Lys Gly Met Pro Arg Leu Thr Asp Leu
                      245                      250                      255

er Val Lys Thr Lys Asp Val Trp Glu Ile Pro Arg Glu Ser Leu Gln
 260                      265                      270

eu Ile Lys Arg Leu Gly Asn Gly Gln Phe Gly Glu Val Trp Met Gly
 275                      280                      285

ir Trp Asn Gly Asn Thr Lys Val Ala Ile Lys Thr Leu Lys Pro Gly
 290                      295                      300

ir Met Ser Pro Glu Ser Phe Leu Glu Glu Ala Gln Ile Met Lys Lys
 305                      310                      315                      320

eu Lys His Asp Lys Leu Val Gln Leu Tyr Ala Val Val Ser Glu Glu
                      325                      330                      335

o Ile Tyr Ile Val Thr Glu Tyr Met Asn Lys Gly Ser Leu Leu Asp

```

eolf-seql-S000001.txt

340

345

350

he Leu Lys Asp Gly Glu Gly Arg Ala Leu Lys Leu Pro Asn Leu Val  
           355                                  360                                  365

sp Met Ala Ala Gln Val Ala Ala Gly Met Ala Tyr Ile Glu Arg Met  
       370                                  375                                  380

sn Tyr Ile His Arg Asp Leu Arg Ser Ala Asn Ile Leu Val Gly Asn  
  85                                  390                                  395                                  400

ly Leu Ile Cys Lys Ile Ala Asp Phe Gly Leu Ala Arg Leu Ile Glu  
                                   405                                  410                                  415

sp Asn Glu Tyr Thr Ala Arg Gln Gly Ala Lys Phe Pro Ile Lys Trp  
                                   420                                  425                                  430

ar Ala Pro Glu Ala Ala Leu Tyr Gly Arg Phe Thr Ile Lys Ser Asp  
                                   435                                  440                                  445

al Trp Ser Phe Gly Ile Leu Leu Thr Glu Leu Val Thr Lys Gly Arg  
  450                                  455                                  460

al Pro Tyr Pro Gly Met Asn Asn Arg Glu Val Leu Glu Gln Val Glu  
  55                                  470                                  475                                  480

rg Gly Tyr Arg Met Pro Cys Pro Gln Asp Cys Pro Ile Ser Leu His  
                                   485                                  490                                  495

u Leu Met Ile His Cys Trp Lys Lys Asp Pro Glu Glu Arg Pro Thr  
                                   500                                  505                                  510

ie Glu Tyr Leu Gln Ser Phe Leu Glu Asp Tyr Phe Thr Ala Thr Glu  
                                   515                                  520                                  525

o Gln Tyr Gln Pro Gly Glu Asn Leu  
  530                                  535

:10&gt; 202

:11&gt; 534

:12&gt; PRT

:13&gt; Homo sapiens

eolf-seql-S000001.txt

400&gt; 202

et Gly Cys Val Gln Cys Lys Asp Lys Glu Ala Thr Lys Leu Thr Glu  
                   5                                  10                                  15

lu Arg Asp Gly Ser Leu Asn Gln Ser Ser Gly Tyr Arg Tyr Gly Thr  
                   20                                  25                                  30

sp Pro Thr Pro Gln His Tyr Pro Ser Phe Gly Val Thr Ser Ile Pro  
                   35                                  40                                  45

sn Tyr Asn Asn Phe His Ala Ala Gly Gly Gln Gly Leu Thr Val Phe  
                   50                                  55                                  60

ly Gly Val Asn Ser Ser Ser His Thr Gly Thr Leu Arg Thr Arg Gly  
                   65                                  70                                  75                                  80

ly Thr Gly Val Thr Leu Phe Val Ala Leu Tyr Asp Tyr Glu Ala Arg  
                   85                                  90                                  95

ir Glu Asp Asp Leu Ser Phe His Lys Gly Glu Lys Phe Gln Ile Leu  
                   100                                  105                                  110

sn Ser Ser Glu Gly Asp Trp Trp Glu Ala Arg Ser Leu Thr Thr Gly  
                   115                                  120                                  125

u Thr Gly Tyr Ile Pro Ser Asn Tyr Val Ala Pro Val Asp Ser Ile  
                   130                                  135                                  140

sn Ala Glu Glu Trp Tyr Phe Gly Lys Leu Gly Arg Lys Asp Ala Glu  
                   145                                  150                                  155                                  160

g Gln Leu Leu Ser Phe Gly Asn Pro Arg Gly Thr Phe Leu Ile Arg  
                   165                                  170                                  175

u Ser Glu Thr Thr Lys Gly Ala Tyr Ser Leu Ser Ile Arg Asp Trp  
                   180                                  185                                  190

p Asp Met Lys Gly Asp His Val Lys His Tyr Lys Ile Arg Lys Leu  
                   195                                  200                                  205

eolf-seql-S000001.txt

p Asn Gly Gly Tyr Tyr Ile Thr Thr Arg Ala Gln Phe Glu Thr Leu  
 210 215 220

n Gln Leu Val Gln His Tyr Ser Glu Lys Ala Asp Gly Leu Cys Phe  
 5 230 235 240

n Leu Thr Val Ile Ala Ser Ser Cys Thr Pro Gln Thr Ser Gly Leu  
 245 250 255

a Lys Asp Ala Trp Glu Val Ala Arg Arg Ser Leu Cys Leu Glu Lys  
 260 265 270

s Leu Gly Gln Gly Cys Phe Ala Glu Val Trp Leu Gly Thr Trp Asn  
 275 280 285

/ Asn Thr Lys Val Ala Ile Lys Thr Leu Lys Pro Gly Thr Met Ser  
 290 295 300

) Glu Ser Phe Leu Glu Glu Ala Gln Ile Met Lys Lys Leu Lys His  
 310 315 320

) Lys Leu Val Gln Leu Tyr Ala Val Val Ser Glu Glu Pro Ile Tyr  
 325 330 335

: Val Thr Glu Tyr Met Asn Lys Gly Ser Leu Leu Asp Phe Leu Lys  
 340 345 350

) Gly Glu Gly Arg Ala Leu Lys Leu Pro Asn Leu Val Asp Met Ala  
 355 360 365

. Gln Val Ala Ala Gly Met Ala Tyr Ile Glu Arg Met Asn Tyr Ile  
 370 375 380

Arg Asp Leu Arg Ser Ala Asn Ile Leu Val Gly Asn Gly Leu Ile  
 390 395 400

Lys Ile Ala Asp Phe Gly Leu Ala Arg Leu Ile Glu Asp Asn Glu  
 405 410 415

Thr Ala Arg Gln Gly Ala Lys Phe Pro Ile Lys Trp Thr Ala Pro  
 420 425 430

eolf-seql-S000001.txt

1 Ala Ala Leu Tyr Gly Arg Phe Thr Ile Lys Ser Asp Val Trp Ser  
 435 440 445

2 Gly Ile Leu Leu Thr Glu Leu Val Thr Lys Gly Arg Val Pro Tyr  
 450 455 460

3 Gly Met Asn Asn Arg Glu Val Leu Glu Gln Val Glu Arg Gly Tyr  
 470 475 480

4 Met Pro Cys Pro Gln Asp Cys Pro Ile Ser Leu His Glu Leu Met  
 485 490 495

5 His Cys Trp Lys Lys Asp Pro Glu Glu Arg Pro Thr Phe Glu Tyr  
 500 505 510

6 Gln Ser Phe Leu Glu Asp Tyr Phe Thr Ala Thr Glu Pro Gln Tyr  
 515 520 525

7 Pro Gly Glu Asn Leu  
 530

0> 203  
 1> 482  
 2> PRT  
 3> Homo sapiens

0> 203

Gly Cys Val Gln Cys Lys Asp Lys Glu Ala Thr Lys Leu Thr Glu  
 5 10 15

Arg Asp Gly Ser Leu Asn Gln Ser Ser Gly Tyr Arg Tyr Gly Thr  
 20 25 30

Pro Thr Pro Gln His Tyr Pro Ser Phe Gly Val Thr Ser Ile Pro  
 35 40 45

Tyr Asn Asn Phe His Ala Ala Gly Gly Gln Gly Leu Thr Val Phe  
 50 55 60

Gly Val Asn Ser Ser Ser His Thr Gly Thr Leu Arg Thr Arg Gly  
 70 75 80



## eolf-seql-S000001.txt

```

' Thr Gly Val Thr Leu Phe Val Ala Leu Tyr Asp Tyr Glu Ala Arg
      85                      90                      95

: Glu Asp Asp Leu Ser Phe His Lys Gly Glu Lys Phe Gln Ile Leu
      100                      105                      110

: Ser Ser Glu Gly Asp Trp Trp Glu Ala Arg Ser Leu Thr Thr Gly
      115                      120                      125

: Thr Gly Tyr Ile Pro Ser Asn Tyr Val Ala Pro Val Asp Ser Ile
      130                      135                      140

: Ala Glu Glu Trp Tyr Phe Gly Lys Leu Gly Arg Lys Asp Ala Glu
      150                      155                      160

: Gln Leu Leu Ser Phe Gly Asn Pro Arg Gly Thr Phe Leu Ile Arg
      165                      170                      175

: Ser Glu Thr Thr Lys Gly Ala Tyr Ser Leu Ser Ile Arg Asp Trp
      180                      185                      190

Asp Met Lys Gly Asp His Val Lys His Tyr Lys Ile Arg Lys Leu
      195                      200                      205

Asn Gly Gly Tyr Tyr Ile Thr Thr Arg Ala Gln Phe Glu Thr Leu
      210                      215                      220

Gln Leu Val Gln His Tyr Ser Gly Thr Trp Asn Gly Asn Thr Lys
      230                      235                      240

Ala Ile Lys Thr Leu Lys Pro Gly Thr Met Ser Pro Glu Ser Phe
      245                      250                      255

Glu Glu Ala Gln Ile Met Lys Lys Leu Lys His Asp Lys Leu Val
      260                      265                      270

Leu Tyr Ala Val Val Ser Glu Glu Pro Ile Tyr Ile Val Thr Glu
      275                      280                      285

Met Asn Lys Gly Ser Leu Leu Asp Phe Leu Lys Asp Gly Glu Gly
      290                      295                      300

```

## eolf-seql-S000001.txt

```

Ala Leu Lys Leu Pro Asn Leu Val Asp Met Ala Ala Gln Val Ala
310 315 320
Gly Met Ala Tyr Ile Glu Arg Met Asn Tyr Ile His Arg Asp Leu
325 330 335
Ser Ala Asn Ile Leu Val Gly Asn Gly Leu Ile Cys Lys Ile Ala
340 345 350
Phe Gly Leu Ala Arg Leu Ile Glu Asp Asn Glu Tyr Thr Ala Arg
355 360 365
Gly Ala Lys Phe Pro Ile Lys Trp Thr Ala Pro Glu Ala Ala Leu
370 375 380
Gly Arg Phe Thr Ile Lys Ser Asp Val Trp Ser Phe Gly Ile Leu
390 395 400
Thr Glu Leu Val Thr Lys Gly Arg Val Pro Tyr Pro Gly Met Asn
405 410 415
Arg Glu Val Leu Glu Gln Val Glu Arg Gly Tyr Arg Met Pro Cys
420 425 430
Gln Asp Cys Pro Ile Ser Leu His Glu Leu Met Ile His Cys Trp
435 440 445
Lys Asp Pro Glu Glu Arg Pro Thr Phe Glu Tyr Leu Gln Ser Phe
450 455 460
Glu Asp Tyr Phe Thr Ala Thr Glu Pro Gln Tyr Gln Pro Gly Glu
470 475 480

```

Leu

```

0> 204
1> 674
2> PRT
3> Homo sapiens

```

eolf-seql-S000001.txt

00&gt; 204

: Ala Pro Gly Gln Ala Pro His Gln Ala Thr Pro Trp Arg Asp Ala  
                   5                  10                  15

: Pro Phe Phe Leu Leu Ser Pro Val Met Gly Leu Leu Ser Arg Ala  
           20                  25                  30

: Ser Arg Leu Arg Gly Leu Gly Pro Leu Glu Pro Trp Leu Val Glu  
       35                  40                  45

: Val Lys Gly Ala Ala Leu Val Glu Ala Gly Leu Glu Gly Glu Ala  
       50                  55                  60

: Thr Pro Leu Ala Ile Pro His Thr Pro Trp Gly Arg Arg Pro Gly  
                   70                  75                  80

: Glu Ala Glu Asp Ser Gly Gly Pro Gly Glu Asp Arg Glu Thr Leu  
           85                  90                  95

: Leu Lys Thr Ser Ser Ser Leu Pro Glu Ala Trp Gly Leu Leu Asp  
          100                 105                 110

: Asp Asp Gly Met Tyr Gly Glu Arg Glu Ala Thr Ser Val Pro Arg  
      115                 120                 125

: Gln Gly Ser Gln Phe Ala Asp Gly Gln Arg Ala Pro Leu Ser Pro  
      130                 135                 140

: Leu Leu Ile Arg Thr Leu Gln Gly Ser Asp Lys Asn Pro Gly Glu  
          150                 155                 160

: Lys Ala Glu Glu Glu Gly Val Ala Glu Glu Glu Gly Val Asn Lys  
          165                 170                 175

: Ser Tyr Pro Pro Ser His Arg Glu Cys Cys Pro Ala Val Glu Glu  
      180                 185                 190

: Asp Asp Glu Glu Ala Val Lys Lys Glu Ala His Arg Thr Ser Thr  
      195                 200                 205

: Ala Leu Ser Pro Gly Ser Lys Pro Ser Thr Trp Val Ser Cys Pro

210 eolf-seql-S000001.txt  
 215 220  
 ly Glu Glu Glu Asn Gln Ala Thr Glu Asp Lys Arg Thr Glu Arg Ser  
 25 230 235 240  
 ys Gly Ala Arg Lys Thr Ser Val Ser Pro Arg Ser Ser Gly Ser Asp  
 245 250 255  
 ro Arg Ser Trp Glu Tyr Arg Ser Gly Glu Ala Ser Glu Glu Lys Glu  
 260 265 270  
 lu Lys Ala His Glu Glu Thr Gly Lys Gly Glu Ala Ala Pro Gly Pro  
 275 280 285  
 n Ser Ser Ala Pro Ala Gln Arg Pro Gln Leu Lys Ser Trp Trp Cys  
 290 295 300  
 n Pro Ser Asp Glu Glu Glu Ser Glu Val Lys Pro Leu Gly Ala Ala  
 5 310 315 320  
 u Lys Asp Gly Glu Ala Glu Cys Pro Pro Cys Ile Pro Pro Pro Ser  
 325 330 335  
 a Phe Leu Lys Ala Trp Val Tyr Trp Pro Gly Glu Asp Thr Glu Glu  
 340 345 350  
 i Glu Asp Glu Glu Glu Asp Glu Asp Ser Asp Ser Gly Ser Asp Glu  
 355 360 365  
 i Glu Gly Glu Ala Glu Ala Ser Ser Ser Thr Pro Ala Thr Gly Val  
 370 375 380  
 e Leu Lys Ser Trp Val Tyr Gln Pro Gly Glu Asp Thr Glu Glu Glu  
 390 395 400  
 Asp Glu Asp Ser Asp Thr Gly Ser Ala Glu Asp Glu Arg Glu Ala  
 405 410 415  
 Thr Ser Ala Ser Thr Pro Pro Ala Ser Ala Phe Leu Lys Ala Trp  
 420 425 430

## eolf-seql-S000001.txt

```

. Tyr Arg Pro Gly Glu Asp Thr Glu Glu Glu Glu Asp Glu Asp Val
  435                               440                               445

> Ser Glu Asp Lys Glu Asp Asp Ser Glu Ala Ala Leu Gly Glu Ala
  450                               455                               460

; Ser Asp Pro His Pro Ser His Pro Asp Gln Ser Ala His Phe Arg
;                               470                               475                               480

' Trp Gly Tyr Arg Pro Gly Lys Glu Thr Glu Glu Glu Glu Ala Ala
  485                               490                               495

' Asp Trp Gly Glu Ala Glu Pro Cys Pro Phe Arg Val Ala Ile Tyr
  500                               505                               510

. Pro Gly Glu Lys Pro Pro Pro Pro Trp Ala Pro Pro Arg Leu Pro
  515                               520                               525

. Arg Leu Gln Arg Arg Leu Lys Arg Pro Glu Thr Pro Thr His Asp
  530                               535                               540

. Asp Pro Glu Thr Pro Leu Lys Ala Arg Lys Val Arg Phe Ser Glu
  550                               555                               560

Val Thr Val His Phe Leu Ala Val Trp Ala Gly Pro Ala Gln Ala
  565                               570                               575

Arg Gln Gly Pro Trp Glu Gln Leu Ala Arg Asp Arg Ser Arg Phe
  580                               585                               590

Arg Arg Ile Ala Gln Ala Gln Glu Glu Leu Ser Pro Cys Leu Thr
  595                               600                               605

Ala Ala Arg Ala Arg Ala Trp Ala Arg Leu Arg Asn Pro Pro Leu
  610                               615                               620

Pro Ile Pro Ala Leu Thr Gln Thr Leu Pro Ser Ser Ser Val Pro
  630                               635                               640

Ser Pro Val Gln Thr Thr Pro Leu Ser Gln Ala Val Ala Thr Pro
  645                               650                               655

```

eolf-seql-S000001.txt

Arg Ser Ser Ala Ala Ala Ala Ala Leu Asp Leu Ser Gly Arg  
           660                          665                          670

Gly

0> 205  
 1> 635  
 2> PRT  
 3> Homo sapiens

0> 205

Ser Val Gly Val Ser Thr Ser Ala Pro Leu Ser Pro Thr Ser Gly  
                   5                          10                          15

Ser Val Gly Met Ser Thr Phe Ser Ile Met Asp Tyr Val Val Phe  
           20                          25                          30

Leu Leu Leu Val Leu Ser Leu Ala Ile Gly Leu Tyr His Ala Cys  
       35                          40                          45

Gly Trp Gly Arg His Thr Val Gly Glu Leu Leu Met Ala Asp Arg  
   50                          55                          60

Met Gly Cys Leu Pro Val Ala Leu Ser Leu Leu Ala Thr Phe Gln  
                   70                          75                          80

Ala Val Ala Ile Leu Gly Val Pro Ser Glu Ile Tyr Arg Phe Gly  
                   85                          90                          95

Gln Tyr Trp Phe Leu Gly Cys Cys Tyr Phe Leu Gly Leu Leu Ile  
           100                          105                          110

Ala His Ile Phe Ile Pro Val Phe Tyr Arg Leu His Leu Thr Ser  
       115                          120                          125

Tyr Glu Tyr Leu Glu Leu Arg Phe Asn Lys Thr Val Arg Val Cys  
   130                          135                          140

Thr Val Thr Phe Ile Phe Gln Met Val Ile Tyr Met Gly Val Val  
                   150                          155                          160

## eolf-seql-S000001.txt

```

1 Tyr Ala Pro Ser Leu Ala Leu Asn Ala Val Thr Gly Phe Asp Leu
      165                      170                      175

2 Leu Ser Val Leu Ala Leu Gly Ile Val Cys Thr Val Tyr Thr Ala
      180                      185                      190

3 Gly Gly Leu Lys Ala Val Ile Trp Thr Asp Val Phe Gln Thr Leu
      195                      200                      205

4 Met Phe Leu Gly Gln Leu Ala Val Ile Ile Val Gly Ser Ala Lys
      210                      215                      220

5 Gly Gly Leu Gly Arg Val Trp Ala Val Ala Ser Gln His Gly Arg
      230                      235                      240

6 Ser Gly Phe Glu Leu Asp Pro Asp Pro Phe Val Arg His Thr Phe
      245                      250                      255

7 Thr Leu Ala Phe Gly Gly Val Phe Met Met Leu Ser Leu Tyr Gly
      260                      265                      270

8 Asn Gln Ala Gln Val Gln Arg Tyr Leu Ser Ser Arg Thr Glu Lys
      275                      280                      285

9 Ala Val Leu Ser Cys Tyr Ala Val Phe Pro Phe Gln Gln Val Ser
      290                      295                      300

10 Cys Val Gly Cys Leu Ile Gly Leu Val Met Phe Ala Tyr Tyr Gln
      310                      315                      320

11 Tyr Pro Met Ser Ile Gln Gln Ala Gln Ala Ala Pro Asp Gln Phe
      325                      330                      335

12 Leu Tyr Phe Val Met Asp Leu Leu Lys Gly Leu Pro Gly Leu Pro
      340                      345                      350

13 Leu Phe Ile Ala Cys Leu Phe Ser Gly Ser Leu Ser Thr Ile Ser
      355                      360                      365

14 Ala Phe Asn Ser Leu Ala Thr Val Thr Met Glu Asp Leu Ile Arg
      370                      375                      380

```

## eolf-seql-S000001.txt

ro Trp Phe Pro Glu Phe Ser Glu Ala Arg Ala Ile Met Leu Ser Arg  
 35 390 395 400  
 ly Leu Ala Phe Gly Tyr Gly Leu Leu Cys Leu Gly Met Ala Tyr Ile  
 405 410 415  
 er Ser Gln Met Gly Pro Val Leu Gln Ala Ala Ile Ser Ile Phe Gly  
 420 425 430  
 at Val Gly Gly Pro Leu Leu Gly Leu Phe Cys Leu Gly Met Phe Phe  
 435 440 445  
 ro Cys Ala Asn Pro Pro Gly Ala Val Val Gly Leu Leu Ala Gly Leu  
 450 455 460  
 al Met Ala Phe Trp Ile Gly Ile Gly Ser Ile Val Thr Ser Met Gly  
 465 470 475 480  
 ie Ser Met Pro Pro Ser Pro Ser Asn Gly Ser Ser Phe Ser Leu Pro  
 485 490 495  
 ir Asn Leu Thr Val Ala Thr Val Thr Thr Leu Met Pro Leu Thr Thr  
 500 505 510  
 ie Ser Lys Pro Thr Gly Leu Gln Arg Phe Tyr Ser Leu Ser Tyr Leu  
 515 520 525  
 p Tyr Ser Ala His Asn Ser Thr Thr Val Ile Val Val Gly Leu Ile  
 530 535 540  
 l Ser Leu Leu Thr Gly Arg Met Arg Gly Arg Ser Leu Asn Pro Ala  
 545 550 555 560  
 r Ile Tyr Pro Val Leu Pro Lys Leu Leu Ser Leu Leu Pro Leu Ser  
 565 570 575  
 s Gln Lys Arg Leu His Cys Arg Ser Tyr Gly Gln Asp His Leu Asp  
 580 585 590  
 r Gly Leu Phe Pro Glu Lys Pro Arg Asn Gly Val Leu Gly Asp Ser



595 eolf-seql-S000001.txt 605

600

rg Asp Lys Glu Ala Met Ala Leu Asp Gly Thr Ala Tyr Gln Gly Ser  
610 615 620

er Ser Thr Cys Ile Leu Gln Glu Thr Ser Leu  
25 630 635

eolf-seql-S000001.txt

1160

.0> 36  
.1> 666  
.2> DNA  
.3> Homo sapiens

00> 36  
ggcttgg ctgcgccctc tcgcgccgca cgctctgagg gttcctccct tttccgagc  
60

ctcctctg gccgcccgcg gggagagagg ccgagatggc agatgagatt gccaaaggctc  
120

tcgctcg gcttgggtggc gacacgatct ttgggaagat catccgcaag gaaataccag  
180

aaatcat ttttgaggat gaccggtgcc ttgctttcca tgacatttcc cctcaagcac  
240

acacattt tctgggtgata cccaagaaac atatatccca gatttctgtg gcagaagatg  
300

atgaaag tcttcttggc cacttaatga ttgttggcaa gaaatgtgct gctgatctgg  
360

atgaataa gggttatcga atggtggtga atgaaggttc agatggtgga cagtctgtct  
420

acgttca tctccatggt cttggaggtc ggcaaagtga ttggcctcct ggtaagcac  
480

ttgggga taattttctc ttcttttaggc aatgattaag ttaggcaatt tccagtatgt  
540

gtaacac acttattttt gcctgtgtat ggagagattc aagaaataat tttaaaaccg  
600

acataat aaaagacatt gttgcatggc ttgtaaaaaa aaaaaaaaaa aaaaaaaaaa  
660

aaa  
666

0> 37  
1> 3683  
2> DNA  
3> Homo sapiens

00> 37  
ggcaggc ggcggctgca gggcaggctc aggggccaca tggctgaggg ggacgcaggg  
60

eolf-seql-S000001.txt

.200

ttatttg ggagaactaa tttgaactta atcaccactt catctaattt tagcaaggta  
.260

gttgccc agggcagtac ctgaattaac tgtccatttc agtacatgtc aagtgccttt  
.320

aggtgga gaagaaatgt ctctagagga atataaatac ctgatttctt gtcacgcaga  
.380

ttgtact gttaaataa tattgccttt tactgctctt tatggcttat tggaatagga  
.440

catttaa gattgatctt ggagagtttc ttcttgtgat tttagttcat aagtatgtca  
.500

ttcattt tatagtgttc atcattgagt aatggattaa gtgaaaatcc aggagtatcc  
.560

tgacgtt atgtgctgag gtgataattc atccaacata tttgttagca taaatattat  
.620

tcagttt ctgttgcaaa ttggtgattg tgaaattaca gaaagtgatt ttctagtctg  
.680

tttttgt ttaattcttg taatgtaagc aataaatatg gagtgtcagt agtctccttc  
740

cccagaa atgtgttggt gtaacattct cgtttctttt aacaacctgg aagtaccttt  
800

gtgatct tcactgagga attagaacta tgatagaagt taggctgtgg caaatgggac  
860

cgtagag tgggatagag gtggcagaat gaacctggtg tagggcagga gtatgttgtg  
920

ttacatc aatttgatgc atgctttcca tctgcactcc agacggcttt ctcaattcca  
980

ttttgca gagagaagga gcaaaccttt tcattggaaa aacagaaaca accctcccc  
040

tttttc ccctctattc atcaaacctt tatgtatctt tcactctcca gttacctcta  
100

attaga tagtgaaatt tacctttgag atataacaat aagtgattaa ctgttcactt  
160

gatgtaa tggcaaaca ttgttaaaag ttattaactg atcacagatt tgcctggact  
220

cttcca gggaggggaac agaagttagg aggcaacttt gggatggtgc tagagcatgg  
280

eolf-seql-S000001.txt

jcgaccaga ggcagaatga ggaaattgaa gcaatggcag ccatttatgg cgaggagtgg  
120

jtgtcattg atgactgtgc caaaatattt tgtattagaa ttagcgacga tatagatgac  
180

caaatgga cactttgctt gcaggtgatg ctgccgaatg aatacccagg tacagctcca  
240

tatctacc agttgaatgc tccttggctt aaagggcaag aacgtgcgga tttatcaa  
300

tccttgagg aaatatatat tcagaatatc ggtgaaagta ttctttacct gtgggtggag  
360

aataagag atgttcttat acaaaaatct cagatgacag aaccaggccc agatgtaaag  
420

gaaaactg aagaggaaga tgttgaatgt gaagatgatc tcatttttagc atgtcagccg  
480

aagttcgg ttaaagcatt ggattttgat atcagtgaac ctccggacaga agtagaagta  
540

agaattac ctccgattga tcatggcatt cctattacag accgaagaag tacttttcag  
600

acacttgg ctccagtggg ttgtcccaaa caggtgaaaa tggttctttc caaattgtat  
660

gaataaga aaatagctag tgccaccac aacatctatg cctacagaat atattgtgag  
720

taaacaga ctttcttaca ggattgtgag gatgatgggg aaacagcagc tgggtgggcgt  
780

cttcac tcatggagat tttgaatgtg aagaatgtca tgggtgtagt atcacgctgg  
840

ggaggga ttctgctagg accagatgc tttaaacata tcaacaactg tgccagaaac  
900

ctagtgg aaaagaacta cacaaattca cctgaggagt catctaaggc tttgggaaag  
960

aaaaaag taagaaaaga caagaagagg aatgaacatt aatacctgaa actataggaa  
1020

tttaattt gcctataatt atatatacat tccatagtca tcaaggaata tattgtgcag  
1080

gagtatc cttgactgct taagtcagcc agttcagcat ggataccaac attagctttt  
1140

cttggtt atatcatctg ccaaaaatag agaacttatg atctattcat gtgtgtttca

## eolf-seql-S000001.txt

gcacaga gaattggaca aacaggtcct tttctctttt ctctgatggt ttacctttaa  
340

atccaac atccttaccg ttggtatttt tagtaagggt atagtaaata gctttacacc  
400

atggatt ctgaaatata aattctaaat tatatttggt ataactatat tttatgttgt  
460

ttatcag gagccatcag agaatgacct ttttgtgttt ggaacacttg gttccatgaa  
520

tatgctt tgtgttttaa ctgttaaaat aatttaaaaa ttaattatit tacataatta  
580

aggttaa aaactattaa cattaaataa tttcacaatt tcaacatgtc aaacctatga  
640

gagatag gaaacaatga gaaacttact tttgctcctt tatacagaat tattaactat  
700

ttactaa ctaaaaaact ctagtattct ttacctaaag tcaattggct ggtaagaggg  
760

gatgcaa aattctccag ctctgaactt ggagctactt cacactctac tcttaatgga  
820

ttgaact aatgatagat agtatTTTTT tcctctatit aaaatttttg tcttgattag  
880

atTTTTT agttctccat ataataatit tctacaatca gatctatgct gtggcatatt  
940

ctttatt taaaaatit tttttagaga tgagttcttg ctctgtcacc taggctggag  
000

agtggca tgatcatggc tcaactgcagc cttgaccttc cagcctgcca agtagctggg  
060

acagaca ggcatgtgct attacacctg gctaattit aaagtTTTTT ttgtaaagat  
120

gtctttc tatgttgccc aggtctgtct tgagctcctg gcctcaatcg atcttctgc  
180

ggttttg gaattacagg tgtgagccac catgcctggc ctgctttgac atattttata  
240

tgtaat taaaaatagt cttcatatgc cagaatataa gagcaagtggt tatctactit  
300

gatggga attgcagaag ctgcatcaaa agtatgctit gaggtatata tagtgaaaca  
360

eolf-seql-S000001.txt

gcctttct gaagagaatt atatcaaact aattacaacc aagaaataat agtatgaagc  
3420

atgctggt tggaggacag gaaaatttat cgggaaaatt acataatccc tctgattcca  
3480

atccagag atagccatta ttattaatat ttggtatgta catccttata ttatTTTTTT  
3540

tatgcatg attttgtata tatggttatt tttctttcca taaaaatggg attaaactgt  
3600

atactgtt ttgtagccta catatttcat atagaagtat attgttaaca ttttccatgt  
3660

ataaatat tctatggctt tct  
3683

10> 38  
11> 3251  
12> DNA  
13> Homo sapiens

00> 38  
gcaactat gaaataatcg tagtatgaga ggcagagatc ggggcgagac aatggggatg  
60

ggcgcggg agccccgttc cggcttagca gcacctccca gccccgcaga ataaaaccga  
120

gcgcccc tccgcgcgcg ccctcccccg agtgcgagac gggaggaggc ggcggcggcc  
180

ggaggagg aggaggaggc cccggaggag gaggcgttgg aggtcgaggc ggaggcgag  
240

ggaggagg ccgaggcgcc ggaggaggcc gaggcgccgg agcaggagga ggccggccgg  
300

gcggcatg agacgagcgt ggcggccgcg gctgctcggg gccgcgctgg ttgccattg  
360

agcggcgt ctgcagctcg cttcaagatg gccgcttggc tcgcattcat tttctgctga  
420

gactttta actttcattg tcttttccgc ccgcttcgat cgctcgcgc cggctgctct  
480

ccgggatt ttttatcaag cagaaatgca tcgaacaacg agaatcaaga tcactgagct  
540

atccccac ctgatgtgtg tgctttgtgg aggtacttc attgatgcca caaccataat  
600

eolf-seql-S000001.txt

aatgtcta cattccttct gtaaaacgtg tattgttcgt tacctggaga ccagcaagta  
660

gtcctatt tgtgatgtcc aagttcacia gaccagacca ctactgaata taaggtcaga  
720

aaactctc caagatattg tatacaaatt agttccaggg cttttcaaaa atgaaatgaa  
780

gaagaagg gatttttatg cagctcatcc ttctgctgat gctgccaatg gctctaata  
840

atagagga gaggttgcag atgaagataa gagaattata actgatgatg agataataag  
900

tatccatt gaattctttg accagaacag attggatcgg aaagtaaaca aagacaaaga  
960

aatctaag gaggaggtga atgataaaag atacttaaga tgcccagcag caatgactgt  
1020

cgactta agaaagtttc tcagaagtaa aatggacata cctaatactt tccagattga  
1080

catgtat gaggaggaac ctttaaagga ttattataca ctaatggata ttgcctacat  
1140

atacctgg agaaggaatg gtccacttcc attgaaatac agagttcgac ctacttgtaa  
1200

aatgaag atcagtcacc agagagatgg actgacaaat gctggagaac tggaaagtga  
1260

ctgggagt gacaaggcca acagcccagc aggaggtatt ccctccacct cttcttgttt  
1320

ctagcccc agtactccag tgcagtctcc tcatccacag tttcctcaca tttccagtac  
1380

gaatgga accagcaaca gccccagcgg taaccaccaa tcttcttttg ccaatagacc  
1440

gaaatca tcagtaaatg ggtcatcagc aacttcttct ggttgatacc tgagactggt  
1500

gaaaaaa attttaaacc cctgatttat atagatatct tcatgccatt acagctttct  
1560

tgctaata acatgtgact atcgtccaat ttgctttctt ttgtagtgac attaaatttg  
1620

ataaaaag atggactaca tgtgatactc ctatggacgt taattgaaaa gaaagattgt  
1680

tataaag aattggtttc ttggaaagca ggcaagactt tttctctgtg ttaggaaaga

eolf-seql-S000001.txt

1740

ggaaatgg tttctgtaac cattgtttgg atttggaagt actctgcagt ggacataagc  
1800

tgggccat agtttgtaa tctcaactaa cgcctacatt acattctcct tgatcgttct  
1860

ttattacg ctgttttgtg aacctgtaga aaacaagtgc tttttatctt gaaattcaac  
1920

acggaaag aatatgcata gaataatgca ttctatgtag ccatgtcact gtgaataacg  
1980

ttcttgca tatttagcca ttttgattcc tgtttgattt atacttctct gttgctacgc  
2040

aaccgatc aaagaaaagt gaacttcagt ttacaatct gtatgcctaa aagcgggtac  
2100

cggtttat tttactgact tgtttaaatg attcgctttt gtaagaatca gatggcatta  
2160

cttgttgt acaatgccat attggtatat gacataacag gaaacagtat tgtatgatat  
2220

ctataaat gctataaaga aatattgtgt ttcatgcatt cagaaatgat tgttaaaatt  
2280

cccaactg gttcgacctt tgcagatacc cataacctat gttgagcctt gcttaccagc  
2340

agaatatt tttaatgtgg atatctaatt ctaaagctctg ttccattaga agcaattggc  
2400

atctttct atactttata tacttttctc cagtaataca tgtttacttt aaaaattggt  
2460

agtgaaga aaaaccttta actgagaaat atggaaaccg tcttaatttt ccattggcta  
2520

atggaatt aatattgtat tttaaaaatg catattgatc actataattc taaaacaatt  
2580

ataaataa accagcaggt tgctaaaaga aggcatttta tctaaagtta ttttaatagg  
2640

gtatagca gtaattttta atttaagagt tgcttttaca gttaacaatg gaatatgcct  
2700

ctgctat gtctgaaaat agaagctatt tattatgagc ttctacaggt atttttaaat  
2760

tgcaagca tgttgaattt aaaatatgaa taaccccacc caacaatttt cagtttat  
2820



## eolf-seql-S000001.txt

.gctttgg tcgaacttgg tgtgtgttca tcacccatca gttatttgtg aggggtgttta  
:880

:tatatga atattgtttc atgtttgtat gggaaaattg tagctaaaca tttcattgtc  
:940

:agtctgc aaaagaagca caattctatt gctttgtctt gcttatagtc attaaatcat  
:000

:ttttaca tatattgctg ttacttctgc tttctttaaa aatatagtaa aggatgtttt  
:060

:aagtcac aagatacata tatttttatt ttgacctaaa tttgtacagt cccattgtaa  
:120

:ttgtttc taattataga tgtaaaatga aatttcattt gtaattggaa aaaatccaat  
:180

.aaggata ttcattttaga aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa  
:240

.aaaaaaa a  
251

0> 39  
1> 2855  
2> DNA  
3> Homo sapiens

0> 39  
tggcagt tatatagacc ggcggcggag cacgcgtgtg tgcggacgca gttgcgtgag  
60

tttgtac tatectcggg gctgtggtgc agagctagtt cctctccagc tcagccgcgt  
120

tttgac atatttgact cttttccccc caggttgaat tgaccaaagc aatggtgatg  
180

aagccta gtccctgct ggtcgggcgg gaatttgtga gacagtatta cacactgctg  
240

caggccc cagacatgct gcatagattt tatggaaaga actcttctta tgtccatggg  
300

ttggatt caaatggaaa gccagcagat gcagtctacg gacagaaaga aatccacagg  
360

gtgatgt cacaaaactt caccaactgc cacaccaaga ttcgccatgt tgatgctcat  
420

acgctaa atgatggtgt ggtagtccag gtgatggggc ttctctctaa caacaaccag  
480

## eolf-seql-S000001.txt

tttgagga gattcatgca aacgtttgtc cttgctcctg aggggtctgt tgcaaataaa  
540

tatgttc acaatgatat cttcagatac caagatgagg tctttggtgg gtttgtcact  
600

tcctcagg aggagtctga agaagaagta gaggaacctg aagaaagaca gcaaacacct  
660

gtggttac ctgatgattc tggaactttc tatgatcagg cagttgtcag taatgacatg  
720

gaacatt tagaggagcc tgttgctgaa ccagagcctg atcctgaacc agaaccagaa  
780

gaacctg tatctgaaat ccaagaggaa aagcctgagc cagtattaga agaaactgcc  
840

gaggatg ctcagaagag ttcttctcca gcacctgcag acatagctca gacagtacag  
900

gacttga ggacattttc ttgggcatct gtgaccagta agaatcttcc acccagtgga  
960

gttcag ttactgggat accacctcat gttgttaaag taccagcttc acagccccgt  
1020

gagtcta agcctgaatc tcagattcca ccacaaagac ctcagcggga tcaaagagtg  
1080

gaacaac gaataaatat tcctccccaag aggggaccca gaccaatccg tgaggctggt  
1140

caagggtg acattgaacc ccgaagaatg gtgagacacc ctgacagtca ccaactcttc  
1200

ggcaacc tgcctcatga agtggacaaa tcagagctta aagatttctt tcaaagttat  
1260

aacgtgg tggagttgcg cattaacagt ggtgggaaat taccgaattt tggttttggt  
1320

tttgatg attctgagcc tggtcagaaa gtccttagca acaggcccat catgttcaga  
1380

gaggctc gtctgaatgt cgaagagaag aagactcgag ctgccaggga aggcgaccga  
1440

gataatc gccttcgggg acctggaggc cctcgagggtg ggctgggtgg tggaatgaga  
1500

cctcccc gtggaggcat ggtgcagaaa ccaggatttg gagtgggaag ggggcttgcg  
1560

eolf-seql-S000001.txt

acggcagt gaatcttcat ggatcttcat gcagccatac aaaccctggt tccaacagaa  
1620

gtgaattt tcgacagcct ttggtatctt ggagtatgac cccagtctgt tataaactgc  
1680

aagtttgt ataattttac tttttttgtg tgtaaatggt gtgtgctccc tctccctctc  
1740

ccctttcc tgacctttag tctttcactt ccaattttgt ggaatgatat ttaggaata  
1800

ggactttt aaagaagcaa aaaaaaagac tgaatttcct tgcttacttt gcatatacag  
1860

tggatttt tttttttttt ttacagccat ttccccaag gaatgtcttg catattactg  
1920

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10&gt; 40

11&gt; 1396

12&gt; DNA

13&gt; Homo sapiens

00&gt; 40

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